STATE OF CALIFORNIA
ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL

In the Matter of: Schnitzer Steel Industries, Inc. 1101 Embarcadero West Oakland, California 94607 EPA ID: C A D981634496 Respondent: Schnitzer Steel Industries Inc. 299 SW Clay Street, Suite 350 Portland, Oregon 97201	Docket No. HWCA-FY20/21-006 ENFORCEMENT ORDER FOR CORRECTIVE ACTION Health and Safety Code Section 25187

1.0 INTRODUCTION

1.1 Parties. The State Department of Toxic Substances Control (DTSC or Department) issues this Enforcement Order for Corrective Action (Order) to Schnitzer Steel Industries, Inc., an Oregon corporation doing business in California (Respondent).

1.2 Facility Status. Respondent is the owner and operator of a hazardous waste management facility located at 1101 Embarcadero West, Oakland, California 94607 (Facility). Beginning in 1961, and continuing through the present, Respondent has operated a metal recycling business which includes operation of a shredder and other equipment at the Facility. Hazardous waste generated and managed at the Facility includes light fibrous material (LFM), aqueous solution (2 < PH < 12.5) with organic residues [California (CA) Waste Codes 133 and 134]; off-specification, aged or surplus inorganics (CA Waste Code 141); asbestos-containing waste (CA Waste Code 151); other inorganic solid wastes (CA Waste Code 181); hydrocarbon solvents (CA Waste Code 213); waste oil and mixed oil (CA Waste Code 221); oil/water separation sludge (CA Waste Code 222); unspecified oil-containing wastes (CA Waste Code 223);

pesticides/pesticide production waste (CA Waste Code 232); polychlorinated biphenyls (PCBs) and materials with PCBs (CA Waste Code 261); latex waste (CA Waste Code 291); off-specification, aged, or surplus organics (CA Waste Code 331); unspecified organic liquid mixture (CA Waste Code 343); other organic solids (CA Waste Code 352); contaminated soils from site clean-up (CA Waste Code 611); liquid with halogenated organic compounds equal or greater than 1,000 milligrams per liter (CA Waste Code 741); ignitables (RCRA Waste Code D001); corrosives (RCRA Waste Code D002); lead (RCRA Waste Code D008); benzene (RCRA Waste Code D018); halogenated solvents (RCRA Waste Code F002); and non-halogenated solvents (RCRA Waste Codes F003 and F005).

1.3 LFM is material produced during the metal shredding process which can be uncontrollably dispersed offsite due to wind or rain if not adequately managed. LFM typically consists of residues from metal shredding operations such as glass, rubber, automobile fluids, dirt, and plastics from shredded dashboards, car seats, and other non-metallic car parts and household appliances. Samples of LFM have been shown to meet the criteria for hazardous waste in California due to concentrations of metals at levels exceeding the toxicity criteria defined in California Code of Regulations, title 22, section 66261.24 (a)(2)(A).

1.4 Jurisdiction. Jurisdiction exists pursuant to Health and Safety Code section 25187, which authorizes DTSC to issue an order to require corrective action when DTSC determines that there is or may be a release of hazardous waste or hazardous waste constituents into the environment from a hazardous waste facility.

1.5 Definition of Terms. The terms used in this Order are as defined in the California Code of Regulations, title 22, section 66260.10, except as otherwise provided.

1.6 Attachments. All attachments to this Order are incorporated herein by reference.

2.0 FINDINGS OF FACT

2.1 DTSC conducted several inspections at the Facility and noted various violations of hazardous waste laws including the failure to operate the Facility in a manner to minimize the release of hazardous waste and/or hazardous waste constituents. From October 11, 2012 to January 17, 2014, during 10 sampling events, DTSC collected 43 samples of LFM from the border of the facility and the neighboring sidewalk and properties. Constituents of concern (COCs) detected in the LFM samples include copper, lead, zinc, cadmium, and chromium. Copper, lead, and zinc were detected at maximum concentrations of 3,280 milligrams per kilogram (mg/kg), 3,100 mg/kg, and 21,200 mg/kg, respectively, exceeding the Total Threshold Limit Concentration (TTLC) values as specified in California Code of Regulations, title 22, section 66261.24(a)(2)(A). In addition, cadmium and chromium were detected at maximum concentrations of 2.04 milligrams per liter (mg/L) and 5.18 mg/L respectively, exceeding the Soluble Threshold Limit Concentration (STLC) values as specified in California Code of Regulations, title 22, section 66261.24(a)(2)(A). These sampling results and locations are documented in DTSC's Sampling Report dated March 20, 2014.

2.2 On March 17 and 18, 2015, DTSC collected 14 soil, solid and debris, aggregate, auto shredder residue and/or LFM samples from within the Facility. All samples detected metals exceeding TTLC or STLC values and the presence of PCBs. Lead, zinc, copper, and nickel concentrations in the collected samples exceeded TTLC values and were detected at maximum concentrations of 24,600 mg/kg, 24,300 mg/kg, 24,700 mg/kg, and 3,970 mg/kg, respectively. The sample results and locations are documented in DTSC's Report of Investigation, dated August 6, 2015.

2.3 Terraphase Engineering, Inc. collected soil, groundwater, and LFM samples from the Facility on behalf of Schnitzer between May 23, 2016 and June 2, 2016. Lead in soil was detected at maximum concentrations of 6,550 mg/kg at 0-1 feet below ground surface (ft bgs), 8,200 mg/kg at 2-3 ft bgs, and 11,000 mg/kg at 3-4 ft bgs, exceeding the TTLC value. Zinc was detected in soil at a maximum concentration of 64,000 mg/kg, exceeding the TTLC value. LFM samples were collected at the Facility on May 26, 2016. Copper, lead, and zinc were detected at maximum concentrations of 2,560 mg/kg; 2,120 mg/kg; and 14,000 mg/kg, respectively, exceeding the TTLC values. Total PCBs in soil were detected at a maximum concentration of 104 mg/kg, exceeding the TTLC value. The sample results are documented in the September 28, 2016 Draft Multi-Media Investigation Report prepared by Terraphase Engineering Inc.

2.4 A letter, dated March 18, 2018, sent by Terraphase Engineering, Inc. to Port of Oakland, documented that LFM was present on paved surfaces in certain areas of Howard Marine Terminal (HMT) and a Port of Oakland property west of the Facility (also known as the Roundhouse property); and that the amount of observed LFM

decreased visibly at both HMT and the Roundhouse with increased distance from the Schnitzer facility. The March 18, 2018 letter contains pictures showing LFM deposited in cracks in the Roundhouse paved surface and on a stormwater drain at the Howard Terminal West boundary. LFM may be potentially released to soil and stormwater through the depicted cracks and stormwater drain, respectively.

2.5 On May 10, 2018, DTSC conducted a survey of the neighborhood surrounding the Facility and observed LFM deposited at several locations. DTSC collected an LFM sample from an adjacent property and the results indicated that soluble lead and zinc was detected at 26.9 mg/L and 404 mg/L, respectively, exceeding STLC values. The sample results are documented in DTSC's Sampling Report dated July 24, 2018.

2.6 On June 5, 2018, DTSC collected two residual burned scrap material samples near the conveyor belt after a fire incident that occurred on June 2, 2018. Both samples contained metals exceeding either TTLC or STLC values. Copper, lead, and zinc were detected at maximum concentrations of 8,050 mg/kg, 1,030 mg/kg, and 12,600 mg/kg, respectively, exceeding TTLC values. Dioxins and PCBs were also detected in both samples at concentrations below TTLC. The sample results are documented in DTSC's Sampling Report dated August 3, 2018.

2.7 On October 22, 2018, DTSC collected six LFM samples from neighboring streets across from the Facility, including Myrtle, Filbert, Linden, Chestnut, and Brush Streets. All six samples detected metals exceeding either TTLC or STLC values. Lead and zinc were detected at maximum concentrations of 1,270 mg/kg and 6,890 mg/kg,

respectively, exceeding the TTLC values. The sample results are documented in DTSC's Sampling Report dated December 21, 2018.

2.8 On November 12, 2020, DTSC conducted a survey of the neighborhood surrounding the Facility and observed LFM deposited at several locations including 1 Market Street, along the railroad right of way between Filbert Street and Market Street, Filbert Street between the railroad tracks and 3rd Street, inside and outside of the storm water drains outside of 95 Linden Street and 1 Market Street, and in the parking lot of 1021 3rd Street and at 95 Linden Street. X-ray fluorescence spectrometer readings of LFM observed in the parking lot of 1021 3rd Street indicated elevated concentrations of zinc and lead. Chalk drawings were also observed in this parking lot, indicating that the area may be used by children. DTSC collected six samples from these locations and all samples detected lead and/or zinc exceeding either TTLC or STLC values. Soluble lead and zinc were detected at maximum concentrations of 42.1 mg/L and 602 mg/L, respectively, exceeding the STLC values. Zinc was detected at a maximum concentration of 9,410 mg/kg, exceeding the TTLC value. The sample locations and results are documented in DTSC's Sampling Report, dated November 20, 2020.

2.9 For approximately six (6) years, Terraphase Engineering, Inc., on behalf of Schnitzer, has been conducting monthly and/or quarterly inspections and LFM removal at specified locations identified as the Target Area which includes (1) publicly accessible portions of the commercial/industrial area in the vicinity of the Facility, roughly bounded by Embarcadero West to the south, Union Street to the west, Clay Street to the east, and 5th Street to the north; (2) riprap areas at the Schnitzer Facility and adjacent Port of

Oakland property; (3) private residential properties to which access was granted; and (4) Port of Oakland properties known as Howard Marine Terminal (HMT) and the Roundhouse. The inspection and LFM removal activities are summarized in Quarterly Summary Reports. Approximately 113 cubic yards of LFM has been removed between the first quarter of 2015 and second quarter of 2020. This volume also includes street dirt, debris, and miscellaneous trash. The summary reports consistently document the presence of LFM in the Target Area that requires continuous LFM removal. Therefore, these activities are not corrective action measures that provide a long-term remedy. As LFM releases were observed in the riprap area and the Port of Oakland Property, both which are bordered by the San Francisco Bay to south, there is a potential for LFM released from the Facility to migrate into the Bay.

2.10 Based on the results of investigations conducted by DTSC and by Schnitzer, DTSC concludes that further investigation is needed to determine the nature and extent of any releases of hazardous waste or hazardous waste constituents at the Facility, and offsite area where surface cracks and stormwater drains are observed, including solid waste management units (SWMUs) and Areas of Concern (AOCs) that either have released or may release hazardous waste or hazardous waste constituents to the environment. The eighteen (18) SWMUs and two (2) AOCs as listed below:

SWMU 1 Bay 1 Warehouse

SWMU 2 Non-Ferrous Storage Building

SWMU 3 Baghouse

SWMU 4 Joint Product Plant

SWMU 5 Substation

SWMU 6 Bay 2 Joint Product Building (used for aggregate storage and treatment)

SWMU 7 Maintenance Bay or Building

SWMU 8 Boneyard including the area used for torch cutting (unpaved)

SWMU 9 Shredder and associated separation and conveyor systems and surrounding aggregate stockpiles

SWMU 10 Wastewater treatment unit (including a one-million-gallon storage tank and associated conveyance systems)

SWMU 11 Shear area and surrounding piles

SWMU 12 Ship loading area and associated conveyor system

SWMU 13 Load receiving area

SWMU 14 Former Engine Block Area

SWMU 15 Unpaved areas used for heavy melt steel stockpiling

SWMU 16 Wheel washing area and associated sump

SWMU 17 Bin Storage Area

SWMU 18 Other hazardous waste (including aggregate and heavy melt steel) stockpiling area(s)

AOC 1 Other unpaved areas

AOC 2 Off-site area surrounding the facility potentially impacted by hazardous waste and/or hazardous waste constituents (including, but not limited to, dust and/or LFM)

2.11 Hazardous wastes or hazardous waste constituents have migrated or may migrate from the Facility into the environment through the following pathways: release of

airborne particulate matter including LFM to air, deposition of airborne particulate matter including LFM, and leaching and migration to soil, surface water, storm water, and groundwater.

2.12 The hazardous waste and hazardous waste constituents of concern at the Facility are metals, volatile organic compounds, PCBs, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons, dioxins, semi-volatile organic compounds, per- and poly-fluoroalkyl substances (PFAS), pesticides and asbestos.

2.13 The Facility is located near residential and industrial/commercial properties. The Facility is adjacent to Oakland Inner Harbor and the closest municipal drinking water well is located about 3331 feet away from the Facility, in Alameda City. There are approximately 18 daycare centers, 10 parks, 8 schools, 4 senior centers, and 2 hospitals located within a mile of the Facility. The Facility is in a census tract that experiences one of the state's highest pollution burden, as identified by a California Communities Environmental Health Screening Tool (Version 3.0) (CalEnviroScreen) score of 80-85 percentile. CalEnviroScreen is a screening tool used to help identify communities disproportionately burdened by multiple sources of pollution and with population characteristics that make them more sensitive to pollution. In 2016, California Environmental Protection Agency's (CalEPA) Environmental Justice Task Force selected this community for a focused environmental enforcement and regulatory compliance initiative due to high pollution burden and increased vulnerability to pollution in the community.

2.14 Releases from the Facility have or may have migrated towards soil, groundwater, air, neighboring properties, and the Oakland Inner Harbor, causing potential risk to nearby residents, children, offsite workers, and ecological receptors**.**

3.0 WORK TO BE PERFORMED

Based on the foregoing FINDINGS OF FACT, IT IS HEREBY ORDERED THAT:

3.1 Respondent shall perform the work required by this Order in a manner consistent with the following: the attached Scopes of Work; DTSC-approved Facility Investigation Workplan, Corrective Measures Study Workplan, Corrective Measures Implementation Workplan, and any other DTSC-approved Workplans; Health and Safety Code and other applicable state and federal laws and their implementing regulations; and applicable DTSC or United States Environmental Protection Agency (U.S. EPA) guidance documents. Applicable guidance documents include, but are not limited to, the “RCRA Facility Investigation (RFI) Guidance” (Interim Final, May 1989, EPA 530/SW-89-031), "RCRA Groundwater Monitoring Technical Enforcement Guidance Document" (OSWER Directive 9950.1, September 1986), “Test Methods for Evaluating Solid Waste” (SW-846), and "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA 530/SW-85-031, July 1986).

3.2 Interim Measures (IM).

3.2.1 Respondent shall evaluate available data and assess the need for interim measures in addition to those specifically required by this Order. Interim measures shall be used whenever possible to control or abate immediate threats to human health

and/or the environment, and to prevent and/or minimize the spread of contaminants while long-term corrective action alternatives are being evaluated.

3.2.2 Respondent shall submit a Current Conditions Report to DTSC in accordance with section 3.3.1. of this Order. The Current Conditions Report shall contain an assessment of interim measures. The assessment must include both previously implemented interim measures and other interim measures that could be implemented at the Facility. The assessment must also identify any additional data needed for making decisions on interim measures. This new data or information shall be collected during the early stages of the Facility Investigation. DTSC will review the Respondent's assessment and determine which interim measures, if any, Respondent will implement at the Facility. If deemed appropriate by DTSC, such determination may be deferred until additional data are collected.

3.2.3 Within 45 days of the effective date of this Order, Respondent shall submit to DTSC a Workplan for the implementation of Interim Measures ("IM Workplan"). The IM Workplan is subject to approval by DTSC and shall provide for the performance of all Interim Measures necessary to achieve stabilization at the Facility. The IM Workplan shall include a schedule for submitting to DTSC an IM Operation and Maintenance Plan and IM Plans and Specifications. The IM Workplan, IM Operation and Maintenance Plan, and IM Plans and Specifications shall be developed in a manner consistent with the Scope of Work for Interim Measures Implementation appended as Attachment 1.

3.2.4 In the event Respondent identifies an immediate or potential threat to human health and/or the environment, discovers new releases of hazardous waste and/or hazardous waste constituents, or discovers new solid waste management units

not previously identified, Respondent shall notify the DTSC Project Coordinator orally within 48 hours of discovery and notify DTSC in writing within 10 days of discovery summarizing the findings, including the immediacy and magnitude of the potential threat to human health and/or the environment. Within 30 days of receiving DTSC's written request, Respondent shall submit to DTSC an IM Workplan for approval. The IM Workplan shall include a schedule for submitting to DTSC an IM Operation and Maintenance Plan and IM Plans and Specifications. The IM Workplan, IM Operation and Maintenance Plan, and IM Plans and Specifications shall be developed in a manner consistent with the Scope of Work for Interim Measures Implementation appended as Attachment 1. If DTSC determines that immediate action is required, the DTSC Project Coordinator may orally authorize the Respondent to act prior to DTSC's receipt of the IM Workplan.

3.2.5 If DTSC identifies an immediate or potential threat to human health and/or the environment, discovers new releases of hazardous waste and/or hazardous waste constituents, or discovers new solid waste management units not previously identified, DTSC will notify Respondent in writing. Within 30 days of receiving DTSC's written notification, Respondent shall submit to DTSC for approval an IM Workplan that identifies Interim Measures that will mitigate the threat. The IM Workplan shall include a schedule for submitting to DTSC an IM Operation and Maintenance Plan and IM Plans and Specifications. The IM Workplan, IM Operation and Maintenance Plan, and IM Plans and Specifications shall be developed in a manner consistent with the Scope of Work for Interim Measures Implementation appended as Attachment 1. If DTSC

determines that immediate action is required, the DTSC Project Coordinator may orally authorize Respondent to act prior to receipt of the IM Workplan.

3.2.6 All IM Workplans shall ensure that the Interim Measures are designed to mitigate current or potential threats to human health and/or the environment, and should, to the extent practicable, be consistent with the objectives of, and contribute to the performance of, any remedy which may be required at the Facility.

3.2.7 Concurrent with the submission of an IM Workplan, Respondent shall submit to DTSC a Health and Safety Plan in accordance with the Scope of Work for a Health and Safety Plan, Attachment 2.

3.2.8 Concurrent with the submission of an IM Workplan, Respondent shall submit to DTSC a Community Profile for DTSC approval in accordance with Attachment 3. Based on the information provided in the Community Profile, if DTSC determines that there is a high level of community concern about the Facility, DTSC will require Respondent to prepare a Public Participation Plan.

3.3 Facility Investigation (FI).

3.3.1 Within 60 days of the effective date of this Order, Respondent shall submit to DTSC a Current Conditions Report and a Workplan for a Facility Investigation ("FI Workplan"). The Current Conditions Report and FI Workplan are subject to approval by DTSC and shall be developed in a manner consistent with the Scope of Work for a Facility Investigation contained in Attachment 4. DTSC will review the Current Conditions Report and FI Workplan and notify Respondent in writing of DTSC's approval or disapproval.

3.3.2 The FI Workplan shall detail the methodology to:

(1) Gather data needed to make decisions on interim measures/ stabilization during the early phases of the Facility Investigation;

(2) Identify and characterize all sources of contamination;

(3) Define the nature, degree, and extent of contamination;

(4) Define the rate of movement and direction of contamination flow;

(5) Characterize the potential pathways of contaminant migration;

(6) Identify actual or potential human and/or ecological receptors; and

(7) Support development of alternatives from which a corrective measure will be selected by DTSC. A specific schedule for implementation of all activities shall be included in the FI Workplan.

3.3.3 Respondent shall submit a FI Report to DTSC for approval in accordance with DTSC-approved FI Workplan schedule. The FI Report shall be developed in a manner consistent with the Scope of Work for a Facility Investigation contained in Attachment 4. If there is a phased investigation, separate FI Reports and a report that summarizes the findings from all phases of the FI must be submitted to DTSC. DTSC will review the FI Report(s) and notify Respondent in writing of DTSC's approval or disapproval.

3.3.4 Concurrent with the submission of a FI Workplan, Respondent shall submit to DTSC a Health and Safety Plan in accordance with Attachment 2. If Workplans for both an IM and FI are required by this Order, Respondent may submit a single Health and Safety Plan that addresses the combined IM and FI activities.

3.3.5 Respondent shall submit a FI Summary Fact Sheet to DTSC that summarizes the findings from all phases of the FI. The FI Summary Fact Sheet shall be

submitted to DTSC in accordance with the schedule contained in the approved FI Workplan. DTSC will review the FI Summary Fact Sheet and notify Respondent in writing of DTSC's approval or disapproval, including any comments and/or modifications. When DTSC approves the FI Summary Fact Sheet, Respondent shall mail the approved FI Summary Fact Sheet to all individuals on the Facility mailing list established pursuant to California Code of Regulations, title 22, section 66271.9(c)(1)(D), within 15 calendar days of receipt of written approval.

3.3.6 If requested by DTSC, Respondent shall submit to DTSC a Community Profile for DTSC approval in accordance with Attachment 3. Based on the information provided in the Community Profile, if DTSC determines that there is a high level of community concern about the Facility, DTSC will require Respondent to prepare a Public Participation Plan.

3.4 Risk Assessment

3.4.1 Based on the information available to DTSC, Respondent is required to conduct a Risk Assessment to evaluate potential human health risk and ecological risk and to establish site-specific action levels and cleanup standards. Respondent shall submit to DTSC for approval a Risk Assessment Workplan within 30 days of receipt of DTSC’s request. Respondent shall submit to DTSC for approval a Risk Assessment Report in accordance with DTSC-approved schedule or upon DTSC’s request.

3.5 Corrective Measures Study (CMS).

3.5.1 Respondent shall prepare a Corrective Measures Study if contaminants concentrations exceed current health-based screening levels and/or if DTSC

determines that the contaminant releases pose a potential threat to human health and/or the environment.

3.5.2 Within 30 days of DTSC's approval of the FI Report or of Respondent's receipt of a written request from DTSC), Respondent shall submit a CMS Workplan to DTSC. The CMS Workplan is subject to approval by DTSC and shall be developed in a manner consistent with the Scope of Work for a Corrective Measures Study contained in Attachment 5.

3.5.3 The CMS Workplan shall detail the methodology for developing and evaluating potential corrective measures to remedy any contamination at the Facility. The CMS Workplan shall identify the potential corrective measures, including any innovative technologies, that may be used for the containment, treatment, remediation, and/or disposal of contamination.

3.5.4 Respondent shall prepare treatability studies for all potential corrective measures that involve treatment except where Respondent can demonstrate to DTSC's satisfaction that they are not needed. The CMS Workplan shall include, at a minimum, a summary of the proposed treatability study including a conceptual design, a schedule for submitting a treatability study workplan, or Respondent's justification for not proposing a treatability study.

3.5.5 Respondent shall submit a CMS Report to DTSC for approval in accordance with DTSC-approved CMS Workplan schedule. The CMS Report shall be developed in a manner consistent with the Scope of Work for a Corrective Measures Study contained in Attachment 5. DTSC will review the CMS Report and notify Respondent in writing of DTSC's approval or disapproval.

3.6 Remedy Selection.

3.6.1 DTSC will provide the public with an opportunity to review and comment on the final draft of the CMS Report, DTSC's proposed corrective measures for the Facility, and DTSC's justification for selection of such corrective measures.

3.6.2 Following the public comment period, DTSC may select final corrective measures or require Respondent to revise the CMS Report and/or perform additional corrective measures studies.

3.6.3 DTSC will notify Respondent of the final corrective measures selected by DTSC in the Final Decision and Response to Comments. The notification will include DTSC's reasons for selecting the corrective measures.

3.7 Corrective Measures Implementation (CMI).

3.7.1 Within 60 days of Respondent's receipt of notification of DTSC's selection of the corrective measures, Respondent shall submit to DTSC a Corrective Measures Implementation (CMI) Workplan. The CMI Workplan is subject to approval by DTSC and shall be developed in a manner consistent with the Scope of Work for Corrective Measures Implementation contained in Attachment 6.

3.7.2 Concurrent with the submission of a CMI Workplan, Respondent shall submit to DTSC a Health and Safety Plan in accordance with Attachment 2.

3.7.3 If requested by DTSC, Respondent shall submit to DTSC a Community Profile for DTSC approval in accordance with Attachment 3. Based on the information provided in the Community Profile, if DTSC determines that there is a high level of community concern about the Facility, DTSC will require Respondent to prepare a Public Participation Plan.

3.7.4 The CMI program shall be designed to facilitate the design, construction, operation, maintenance, and monitoring of corrective measures at the Facility. In accordance with the schedule contained in the approved CMI Workplan, Respondent shall submit to DTSC the documents listed below. These documents shall be developed in a manner consistent with the Scope of Work for Corrective Measures Implementation contained in Attachment 6:

- Operation and Maintenance Plan
- Draft Plans and Specifications
- Final Plans and Specifications
- Construction Workplan
- Construction Completion Report
- Corrective Measures Completion Report

3.7.5 DTSC will review all required CMI documents and notify Respondent in writing of DTSC's approval or disapproval.

3.7.6 Respondent shall provide a financial assurance mechanism for corrective action to DTSC within 90 days of DTSC’s approval of a Corrective Measures Implementation Workplan, IM Workplan or a DTSC-approved equivalent. The financial assurance mechanism must consist of one of the options specified in California Code of Regulations, title 22, sections 66264.143 or 66265.143 as applicable. Respondent shall establish the financial assurance mechanism to allow DTSC access to the funds to undertake corrective measures implementation tasks if Respondent is unable or unwilling to undertake the required tasks. If Respondent proposes to use the financial test or corporate guarantee as the financial assurance mechanism for corrective action,

Respondent shall also establish a process that allows DTSC access to the funds to undertake corrective measures implementation tasks if DTSC determines that Respondent is unable or unwilling to undertake the required tasks. Any financial assurance mechanism or process proposed by Respondent shall be subject to DTSC's approval.

4.0 OTHER REQUIREMENTS AND PROVISIONS

4.1 Project Coordinator. Within 14 days of the effective date of this Order, DTSC and Respondent shall each designate a Project Coordinator and shall notify each other in writing of the Project Coordinator selected. Each Project Coordinator shall be responsible for overseeing the implementation of this Order and for designating a person to act in his/her absence. All communications between Respondent and DTSC, and all documents, report approvals, and other correspondence concerning the activities performed pursuant to this Order shall be directed through the Project Coordinators. Each party may change its Project Coordinator with at least seven days prior written notice.

4.2 Department Approval.

4.2.1 Respondent shall revise any workplan, report, specification, or schedule in accordance with DTSC's written comments. Respondent shall submit to DTSC any revised documents by the due date specified by DTSC. Revised submittals are subject to DTSC's approval or disapproval.

4.2.2 Upon receipt of DTSC's written approval, Respondent shall commence work and implement any approved workplan in accordance with the schedule and provisions contained therein.

4.2.3 Any Department approved workplan, report, specification, or schedule required by this Order shall be deemed incorporated into this Order.

4.2.4 Verbal advice, suggestions, or comments given by DTSC representatives will not constitute an official approval or decision.

4.3 Submittals.

4.3.1 Beginning with the first full month following the effective date of this Order, Respondent shall provide DTSC with quarterly progress reports of corrective action activities conducted pursuant to this Order. Progress reports are due on the fifth day of each month. The progress reports shall conform to the Scope of Work for Progress Reports contained in Attachment 7. DTSC may adjust the frequency of progress reporting to be consistent with site-specific activities.

4.3.2 Any report or other document submitted by Respondent pursuant to this Order shall be signed and certified by the project coordinator, a responsible corporate officer, or a duly authorized representative.

4.3.3 The certification required above, shall be in the following form:

> I certify that the information contained in or accompanying this submittal is true, accurate, and complete. As to those portions of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared at my direction in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted.

Signature: _____

Name: _____

Title: _____

Date: _____

4.3.4 Respondent shall provide two copies of all documents, including but not limited to, workplans, reports, and correspondence of 15 pages or longer. All copies should be submitted in paper copy and electronically. Submittals specifically exempted from this copy requirement are all progress reports and correspondence of less than 15 pages, of which one copy is required.

4.3.5 Unless otherwise specified, all reports, correspondence, approvals, disapprovals, notices, or other submissions relating to this Order shall be in writing and shall be sent to the current Project Coordinators.

4.4 Proposed Contractor/Consultant.

All work performed pursuant to this Order shall be under the direction and supervision of a professional engineer or registered geologist, registered in California, with expertise in hazardous waste site cleanup. Respondent's contractor or consultant shall have the technical expertise sufficient to fulfill his or her responsibilities. Within 14 days of the effective date of this Order, Respondent shall notify the DTSC Project Coordinator in writing of the name, title, and qualifications of the professional engineer or registered geologist and of any contractors or consultants and their personnel to be used in carrying out the requirements of this Order. DTSC may disapprove of Respondent's contractor and/or consultant.

4.5 Quality Assurance.

4.5.1 All sampling and analyses performed by Respondent under this Order shall follow applicable Department and U.S. EPA guidance for sampling and analysis. Workplans shall contain quality assurance/quality control and chain of custody procedures for all sampling, monitoring, and analytical activities. Any deviations from the approved workplans must be approved by DTSC prior to implementation, must be documented, including reasons for the deviations, and must be reported in the applicable report (e.g., FI Report).

4.5.2 The names, addresses, and telephone numbers of the California State certified analytical laboratories Respondent proposes to use must be specified in the applicable workplans.

4.5.3 All workplans required under this Order shall include data quality objectives for each data collection activity to ensure that data of known and appropriate quality are obtained, and that data are sufficient to support their intended uses.

4.5.4 Respondent shall monitor to ensure that high quality data are obtained by its consultant or contract laboratories. Respondent shall ensure that laboratories used by Respondent for analysis perform such analysis according to the latest approved edition of "Test Methods for Evaluating Solid Waste, (SW_846)", or other methods deemed satisfactory to DTSC. If methods other than U.S. EPA methods are to be used, Respondent shall specify all such protocols in the applicable workplan (e.g., FI Workplan). DTSC may reject any data that do not meet the requirements of the approved workplan, U.S. EPA analytical methods, or quality assurance/quality control procedures, and may require resampling and analysis.

4.5.5 Respondent shall ensure that the California State certified laboratories used by Respondent for analyses have a quality assurance/quality control program. DTSC may conduct a performance and quality assurance/quality control audit of the laboratories chosen by Respondent before, during, or after sample analyses. Upon request by DTSC, Respondent shall have its selected laboratory perform analyses of samples provided by DTSC to demonstrate laboratory performance. If the audit reveals deficiencies in a laboratory's performance or quality assurance/quality control procedures, resampling and analysis may be required.

4.6 Sampling and Data/Document Availability.

4.6.1 Respondent shall submit to DTSC upon request the results of all sampling and/or tests or other data generated by its employees, agents, consultants, or contractors pursuant to this Order.

4.6.2 Notwithstanding any other provisions of this Order, DTSC retains all its information gathering and inspection authority and rights, including enforcement actions related thereto, under Health and Safety Code, and any other state or federal statutes or regulations.

4.6.3 Respondent shall notify DTSC in writing at least 7 days prior to beginning each separate phase of field work approved under any workplan required by this Order. If Respondent believes it must commence emergency field activities without delay, Respondent may seek emergency telephone authorization from DTSC Project Coordinator or, if the Project Coordinator is unavailable, his/her Branch Chief, to commence such activities immediately.

4.6.4 At the request of DTSC, Respondent shall provide or allow DTSC or its authorized representative to take split or duplicate samples of all samples collected by Respondent pursuant to this Order. Similarly, at the request of Respondent, DTSC shall allow Respondent or its authorized representative to take split or duplicate samples of all samples collected by DTSC under this Order.

4.7 Access.

4.7.1 Subject to the Facility's security and safety procedures, Respondent shall provide DTSC and its representatives access at all reasonable times to the Facility and any other property to which access is required for implementation of this Order and shall permit such persons to inspect and copy all records, files, photographs, documents, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Order and that are within the possession or under the control of Respondent or its contractors or consultants.

4.7.2 To the extent that work being performed pursuant to this Order must be done beyond the Facility property boundary, Respondent shall use its best efforts to obtain access agreements necessary to complete work required by this Order from the present owners of such property within 30 days of approval of any workplan for which access is required. Best efforts as used in this paragraph shall include, at a minimum, a letter by certified mail from the Respondent to the present owners of such property requesting an agreement to permit Respondent and DTSC and its authorized representatives access to such property and offering the payment by Respondent of reasonable sums of money in consideration of granting access. Any such access agreement shall provide for access to DTSC and its representatives. Respondent shall

provide DTSC's Project Coordinator with a copy of any access agreements. In the event that an agreement for access is not obtained within 30 days of approval of any workplan for which access is required, or of the date that the need for access becomes known to Respondent, Respondent shall notify DTSC in writing within 14 days thereafter regarding both the efforts undertaken to obtain access and its failure to obtain such agreements. DTSC may, at its discretion, assist Respondent in obtaining access.

4.7.3 Nothing in this section limits or otherwise affects DTSC's right of access and entry pursuant to any applicable state or federal law or regulation.

4.7.4 Nothing in this Order shall be construed to limit or otherwise affect Respondent's liability and obligation to perform corrective action including corrective action beyond the Facility boundary.

4.8 Record Preservation.

4.8.1 Respondent shall retain, during the implementation of this Order and for a minimum of six years thereafter, all data, records, and documents that relate in any way to the implementation of this Order or to hazardous waste management and/or disposal at the Facility. Respondent shall notify DTSC in writing 90 days prior to the destruction of any such records and shall provide DTSC with the opportunity to take possession of any such records. Such written notification shall reference the effective date, caption, and docket number of this Order and shall be addressed to:

Julie Pettijohn, Branch Chief
Site Mitigation and Restoration Program
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California 94710

4.8.2 If Respondent retains or employs any agent, consultant, or contractor for the purpose of complying with the requirements of this Order, Respondent will require any such agents, consultants, or contractors to provide Respondent a copy of all documents produced pursuant to this Order.

4.8.3 All documents pertaining to this Order shall be stored in a central location at the Facility to afford ease of access by DTSC and its representatives.

4.9 Change in Ownership. No change in ownership or corporate or partnership status relating to the Facility shall in any way alter Respondent's responsibility under this Order. No conveyance of title, easement, or other interest in the Facility, or a portion of the Facility, shall affect Respondent's obligations under this Order. Unless DTSC agrees that such obligations may be transferred to a third party, Respondent shall be responsible for and liable for any failure to carry out all activities required of Respondent by the terms and conditions of this Order, regardless of Respondent's use of employees, agents, contractors, or consultants to perform any such tasks.

4.10 Notice to Contractors and Successors. Respondent shall provide a copy of this Order to all contractors, laboratories, and consultants retained to conduct or monitor any portion of the work performed pursuant to this Order and shall condition all such contracts on compliance with the terms of this Order. Respondent shall give written notice of this Order to any successor in interest prior to transfer of ownership or operation of the Facility and shall notify DTSC at least seven days prior to such transfer.

4.11 Compliance with Applicable Laws. All actions required to be taken pursuant to this Order shall be undertaken in accordance with the applicable

requirements of all local, state, and federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations.

4.12 Costs. Respondent is liable for all costs associated with the implementation of this Order, including all costs incurred by DTSC in overseeing the work required by this Order.

4.13 Endangerment during Implementation. In the event that DTSC determines that any circumstances or activities (whether or not pursued in compliance with this Order) may pose an imminent or substantial endangerment to the health or welfare of people at the Facility or in the surrounding area or to the environment, DTSC may order Respondent to stop further implementation of this Order for such period of time as needed to prevent or abate the endangerment. Any deadline in this Order directly affected by an Order to Stop Work under this section shall be extended for the term of the Order to Stop Work.

4.14 Liability. Nothing in this Order shall constitute or be construed as a satisfaction or release from liability for any conditions or claims arising as a result of past, current, or future operations of Respondent. Notwithstanding compliance with the terms of this Order, Respondent may be required to take further actions as are necessary to protect public health or welfare or the environment.

4.15 Government Liabilities. The State of California shall not be liable for injuries or damages to persons or property resulting from acts or omissions by Respondent or related parties specified in section 4.19 in carrying out activities pursuant

to this Order, nor shall the State of California be held as a party to any contract entered into by Respondent or its agents in carrying out activities pursuant to the Order.

4.16 Additional Enforcement Actions. By issuance of this Order, DTSC does not waive the right to take further enforcement actions.

4.17 Incorporation of Plans and Reports. All plans, schedules, and reports that require Department approval and are submitted by Respondent pursuant to this Order are incorporated in this Order upon approval by DTSC.

4.18 Penalties for Noncompliance. Failure to comply with the terms of this Order may subject Respondent to costs, penalties, and/or punitive damages for any costs incurred by DTSC or other government agencies as a result of such failure, as provided by Health and Safety Code section 25188 and other applicable provisions of law.

4.19 Parties Bound. This Order shall apply to and be binding upon Respondent, and its officers, directors, agents, employees, contractors, consultants, receivers, trustees, successors, and assignees, including but not limited to individuals, partners, and subsidiary and parent corporations.

4.20 Compliance with Waste Discharge Requirements. Respondent shall comply with all applicable waste discharge requirements issued by the State Water Resources Control Board or a California Regional Water Quality Control Board.

4.21 Submittal Summary. Below is a summary of the major reporting requirements contained in this Order. The summary is provided as a general guide and does not contain all requirements. Please refer to the specific language of this Order for all the requirements. Unless otherwise specified, all timeframes are calendar days.

Section	Action	Due Date
3.2.2.	Submit a Current Conditions Report	60 days of the effective date of this Order
3.2.3	Submit Interim Measures Workplan, Health and Safety Plan, and Public Involvement Plan	45 days of the effective date of this Order
3.2.4.	Notify DTSC orally of immediate of potential threats to human health and/or the environment	48 hours after discovery
	Notify DTSC in writing of potential threats to human health	10 days after discovery
	Submit an IM Workplan	30 days of receiving DTSC's written notification
3.2.5	Submit an IM Workplan	30 days of receiving DTSC's written notification
3.3.1 3.3.4 3.3.5 3.3.6	Submit FI Workplan, Health and Safety Plan, Summary Fact Sheet and Community Profile and Public Participation Plan	60 days from effective date of this Order
3.4.1	Risk Assessment Workplan	30 days of receipt of DTSC's determination
3.5.2	Submit CMS Workplan	30 days of DTSC's approval of the FI Report or of Respondent's receipt of a written request from DTSC
3.7.1. 3.7.2 3.7.3	Submit CMI Workplan, Health and Safety Plan, Community Profile and Public Participation Plan	60 days from receipt of notification of DTSC selection of a corrective measure
3.7.6	Submit Financial Assurance mechanism	90 days of DTSC's approval of an IM workplan or CMI Workplan
4.1.	Designate Project Coordinator and notify DTSC in writing	14 days from effective date of this Order
4.2.2	Implement approved workplans	In accordance with schedules contained in DTSC approved workplans
4.3.1	Submit first Progress Report	5th day of each month following the effective date of Order
	Submit Progress Reports	Quarterly
4.4.	Notify DTSC in writing of contractors to carry out the requirements of this Order	14 days from effective date of this Order

Section	Action	Due Date
4.6.3.	Notify DTSC of when field work starts	7 days before each phase of field work

5.0 RIGHT TO A HEARING

You may request a hearing to challenge the Order. Appeal procedures are described in the attached Statement to Respondent.

6.0 EFFECTIVE DATE

Service by mail This Order is final and effective 20 days from the date of signature, which is the date of the cover letter transmitting the Order to you, unless you request a hearing within the 20-day period.

Date of Issuance: 2/23/2021

Steven Becker, Branch Chief
SSFL and LABRIC Branch
Site Mitigation and Restoration Program
Department of Toxic Substances Control

ATTACHMENT 1:
SCOPE OF WORK FOR INTERIM MEASURES IMPLEMENTATION

PURPOSE

Interim measures are actions to control and/or eliminate releases of hazardous waste and/or hazardous constituents from a facility prior to the implementation of a final corrective measure. Interim measures must be used whenever possible to achieve the goal of stabilization which is to control or abate threats to human health and/or the environment, and to prevent or minimize the spread of contaminants while long-term corrective action alternatives are being evaluated.

SCOPE

The documents required for Interim Measures (IM) are, unless the Department of Toxic Substances Control (DTSC) specifies otherwise, an IM Workplan, an Operation and Maintenance Plan, and IM Plans and Specifications. The scope of work (SOW) for each document is specified below. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If Respondent can justify, to the satisfaction of DTSC, that a plan or portions thereof are not needed in the given site-specific situation, then DTSC may waive that requirement.

The scope and substance of interim measures should be focused to fit the site-specific situation and be balanced against the need to take quick action.

DTSC may require Respondent to conduct additional studies beyond what is discussed in the SOWs to support the IM program. Respondent will furnish all personnel, materials, and services necessary to conduct the additional tasks.

A. Interim Measures Workplan

Respondent shall prepare an IM Workplan that evaluates interim measure options and clearly describes the proposed interim measure, the key components or elements that are needed, describes the designer's vision of the interim measure in the form of conceptual drawings and schematics, and includes procedures and schedules for

implementing the interim measure(s). The IM Workplan must be approved by DTSC prior to implementation. The IM Workplan must, at a minimum, include the following elements:

1. Introduction/Purpose

Describe the purpose of the document and provide a summary of the project.

2. Conceptual Site Model of Contaminant Migration

Respondent must present a conceptual site model of contaminant migration to develop a preliminary understanding of the site's potential risks to human health and the environment, and to assist in developing the interim measures and/or facility investigation. The conceptual site model presents information about site conditions and potential impacts to receptors and may be updated as new information is obtained. The information can be provided in a schematic presentation or pictorially. The conceptual site model should illustrate possible contaminant (including but not limited to dust, debris and light fibrous materials) transport mechanisms and exposure pathways from various media that may be affected: air, soil, sediments, and water, including soil vapor, groundwater, and surface water.

The conceptual site model consists of a working hypothesis of how the contaminants may move from the release source to the receptor population. The conceptual site model is also developed by looking at the applicable physical parameters (e.g., water solubility, density, Henry's Law Constant, etc.) for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to ground water, etc.). Describe the phase (water, soil, gas, non-aqueous) and location where contaminants including but not limited to dust, debris and light fibrous materials are likely to be found. This analysis may have already been done as part of earlier work (e.g., Current Conditions Report). If this is the case, then provide a summary of the conceptual site model with a reference to the earlier document.

3. Evaluation of Interim Measure Alternatives

List, describe and evaluate interim measure alternatives that have the potential to stabilize the facility. Propose interim measures for implementation and provide rationale for the selection. Document the reasons for excluding any interim measure alternatives.

4. Description of Interim Measures

Qualitatively describe what the proposed interim measure is supposed to do and how it will function at the facility.

5. Data Sufficiency

Review existing data needed to support the design effort and establish whether there are sufficient accurate data available for this purpose. Respondent must summarize the assessment findings and specify any additional data needed to complete the interim measure design. DTSC may require, or Respondent may propose that sampling and analysis plans and/or treatability study workplans be developed to obtain the additional data. Submittal times for any new sampling and analysis plans and/or treatability study workplans must be included in the project schedule.

6. Project Management

Describe the levels of authority and responsibility (include organization chart), lines of communication and a description of the qualifications of key personnel who will direct the interim measure design and implementation effort (including contractor personnel).

7. Project Schedule

The project schedule must specify all significant steps in the process, when any key documents (e.g., plans and specifications, operation, and maintenance plan) are to be submitted to DTSC and when the interim measure is to be implemented.

8. Design Basis

Discuss the process and methods used to design all major components of the interim measure. Discuss the significant assumptions made and possible sources of error. Provide justification for the assumptions.

9. Conceptual Process/Schematic Diagrams.
10. Site plan showing preliminary plant layout and/or treatment and storage area.
11. Tables listing number and type of major components with approximate dimensions.
12. Tables giving preliminary mass balances.
13. Site safety and security provisions (e.g., fences, fire control, etc.).
14. Waste Management Practices

Describe the wastes generated by the construction of the interim measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

15. Required Permits

List and describe the permits needed to construct the interim measure. Indicate on the project schedule when the permit applications will be submitted to the applicable agencies and an estimate of the permit issuance date.

16. Sampling and Monitoring

Sampling and monitoring activities may be needed for design and during construction and operation of the interim measure. If sampling activities are necessary, the IM Workplan must include a complete sampling and analysis section which specifies at a minimum the following information:

a. Description and purpose of monitoring tasks.
b. Data quality objectives.
c. Analytical test methods, method detection limits, and practical quantitation limits.
d. Name of analytical laboratory.
e. Laboratory quality control (include laboratory QA/QC procedures in appendices).
f. Sample collection procedures and equipment.

g. Field quality control procedures:
    - duplicates (10% of all field samples)
    - blanks (field, equipment, etc.)
    - equipment calibration and maintenance
    - equipment decontamination
    - sample containers
    - sample preservation
    - sample holding times (must be specified)
    - sample packaging and shipment
    - sample documentation (field notebooks, sample labeling, etc.)
    - chain of custody
h. Criteria for data acceptance and rejection; and
i. Schedule of monitoring frequency.

Respondent shall follow all DTSC and USEPA guidance for sampling and analysis. DTSC may request that the sampling and analysis section be a separate document.

17. Appendices including:
    a. Design Data - Tabulations of significant data used in the design effort.
    b. Equations - List and describe the source of major equations used in the design process.
    c. Sample Calculations - Present and explain one example calculation for significant calculations; and
    d. Laboratory or Field Test Results.

B. Interim Measures Operation and Maintenance Plan

Respondent shall prepare an Interim Measures Operation and Maintenance (O&M) Plan that includes a strategy and procedures for performing operations, maintenance, and monitoring of the interim measure(s). An Interim Measures O&M Plan shall be

submitted to DTSC simultaneously with the Plans and Specifications. The Interim Measures O&M Plan shall, at a minimum, include the following elements:

1. Purpose/Approach

Describe the purpose of the document and provide a summary of the project.

2. Project Management

Describe the levels of authority and responsibility (include organization chart), lines of communication and a description of the qualifications of key personnel who will operate and maintain the interim measure(s) (including contractor personnel).

3. System Description

Describe the interim measure and identify significant equipment.

4. Personnel Training

Describe the training process for Interim Measures O&M personnel. Respondent shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.

5. Start-Up Procedures

Describe system start-up procedures including any operational testing.

6. Operation and Maintenance Procedures

Describe normal O&M procedures including:

a. Description of tasks for operation.

b. Description of tasks for maintenance.

c. Description of prescribed treatment or operation condition; and

d. Schedule showing frequency of each O&M task.

7. Replacement schedule for equipment and installed components.
8. Waste Management Practices

Describe the wastes generated by operation of the interim measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

9. Sampling and Monitoring

Sampling and monitoring activities may be needed for effective operation and maintenance of the interim measure. If sampling activities are necessary, the Interim Measures O&M plan must include a complete sampling and analysis section which specifies at a minimum the following information:

a. Description and purpose of monitoring tasks.
b. Data quality objectives.
c. Analytical test methods, method detection limits, and practical quantitation limits.
d. Name of analytical laboratory.
e. Laboratory quality control (include laboratory QA/QC procedures in appendices).
f. Sample collection procedures and equipment.
g. Field quality control procedures:
    - duplicates (10% of all field samples)
    - blanks (field, equipment, etc.)
    - equipment calibration and maintenance
    - equipment decontamination
    - sample containers
    - sample preservation
    - sample holding times (must be specified)
    - sample packaging and shipment
    - sample documentation (field notebooks, sample labeling, etc.)
    - chain of custody

h. Criteria for data acceptance and rejection; and

i. Schedule of monitoring frequency.

Respondent shall follow all DTSC and USEPA guidance for sampling and analysis. DTSC may request that the sampling and analysis section be a separate document.

10. Interim Measures O&M Contingency Procedures:
    a. Procedures to address system breakdowns and operational problems including a list of redundant and emergency back-up equipment and procedures.
    b. Should the interim measure suffer complete failure, specify alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and/or the environment or exceed cleanup standards; and
    c. The Interim Measures O&M Plan must specify that, in the event of a major breakdown and/or complete failure of the interim measure (includes emergency situations), Respondent will orally notify DTSC within 24 hours of the event and will notify DTSC in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and the environment.

11. Data Management and Documentation Requirements

Describe how analytical data and results will be evaluated, documented, and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data.

The O&M Plan shall specify that Respondent collect and maintain the following information:

a. Progress Report Information
    - Work Accomplishments (e.g., performance levels achieved, hours of treatment operation, treated and/or excavated volumes, concentration of

contaminants in treated and/or excavated volumes, nature and volume of wastes generated, etc.).

- Record of significant activities (e.g., sampling events, inspections, problems encountered, action taken to rectify problems, etc.).

b. Monitoring and laboratory data.

c. Records of operating costs; and

d. Personnel, maintenance, and inspection records.

DTSC may require that Respondent submit additional reports that evaluate the effectiveness of the interim measure in meeting the stabilization goal.

C. Interim Measures Plans and Specifications

Respondent shall prepare Plans and Specifications for the interim measure that are based on the conceptual design but include additional detail. The Plans and Specifications shall be submitted to DTSC simultaneously with the Operation and Maintenance Plan. The design package must include drawings and specifications needed to construct the interim measure. Depending on the nature of the interim measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings
- Electrical Drawings
- Structural Drawings
- Piping and Instrumentation Diagrams
- Excavation and Earthwork Drawings
- Equipment Lists
- Site Preparation and Field Work Standards
- Preliminary Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications to DTSC, Respondent shall:

a. Proofread the specifications for accuracy and consistency with the conceptual design; and
b. Coordinate and cross-check the specifications and drawings.

ATTACHMENT 2:
SCOPE OF WORK FOR HEALTH AND SAFETY PLAN

The Department of Toxic Substances Control (DTSC) may require that Respondent prepare a Health and Safety Plan for any corrective action field activity (e.g., soil or ground water sampling, drilling, construction, operation, and maintenance of a treatment system, etc.). The Health and Safety Plan must, at a minimum, include the following elements:

Objectives

Describe the goals and objectives of the Health and Safety Plan (must apply to on-site personnel and visitors). The Health and Safety Plan must be consistent with the facility Contingency Plan, OSHA Regulations, NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985), all state and local regulations and other DTSC guidance as provided.

Hazard Assessment

List and describe the potentially hazardous substances that could be encountered by field personnel during field activities.

Discuss the following:

- Inhalation Hazards
- Dermal Exposure
- Ingestion Hazards
- Physical Hazards
- Overall Hazard Rating
- Biological Hazards (including COVID-19)

Include a table that, at a minimum, lists: Known Contaminants, Highest Observed Concentration, Media, Symptoms/Effects of Acute Exposure.

Personal Protection/Monitoring Equipment

For each field task, describe personal protection levels and identify all monitoring equipment. Describe any action levels and corresponding response actions (i.e., when will levels of safety be upgraded). Describe decontamination procedures and areas.

Site Organization and Emergency Contacts

List and identify all contacts (include phone numbers). Identify the nearest hospital and provide a regional map showing the shortest route from the facility to the hospital. Describe site emergency procedures and any site safety organizations. Include evacuation procedures for neighbors (where applicable). Include a facility Map showing emergency station locations (first aid, eye wash areas, etc.).

ATTACHMENT 3:
COMMUNITY PROFILE OUTLINE
FOR SCHNITZER STEEL OAKLAND FACILITY

The following items should be included in the Community Profile:

Site Description

- Description of proposed project.
- Map.
- Description of the site/facility location.
- Description of the surrounding land uses and environmental resources (including proximity to residential housing, schools, churches, etc.).
- Visibility of the site to neighbors.
- Demographics of community in which the site is located (e.g., socioeconomic level, ethnic composition, specific language considerations, etc.). This information may be found in local libraries (e.g., census records).

Local Interest

- Contacts with community members - any inquiries from community members, groups, organizations, etc. (include names, phone numbers, and addresses on the key contact list).
- Community interactions - any current meetings, events, presentations, etc.
- Media coverage - any newspaper, magazine, television, etc., coverage.
- Government contacts - city and county staff, state, and local elected officials.

Key Contact List

- Names, addresses, and phone numbers of city manager, city/county planning department staff, local elected officials, and other community members with whom previous contact has been made.

Past Public Involvement Activities

- Any ad hoc committees, community meetings, workshops, letters, newsletters, etc., about the site or similar activity.

Key Issues and Concerns

- Any specific concerns/issues raised by the community regarding the site/facility or any activities performed on the site/facility.
- Any anticipated concerns/issues regarding the site/facility.
- Any general environmental concerns/issues in the community.

ATTACHMENT 4:
SCOPE OF WORK FOR A FACILITY INVESTIGATION

PURPOSE

The purpose of this Facility Investigation (FI) is to determine the nature and extent of releases of hazardous waste or constituents from regulated units, solid waste management units, and other source areas at the Facility and to gather all necessary data to support the Corrective Measures Study. The FI must include characterization of the facility (processes, waste management, etc.), environmental setting, source areas, nature and extent of contamination, migration pathways (transport mechanisms) and all potential receptors.

SCOPE

The documents required for a FI are, unless the Department of Toxic Substances Control (DTSC) specifies otherwise, a Current Conditions Report, a Facility Investigation Workplan and a Facility Investigation Report. The scope of work (SOW) for each document is specified below. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If Respondent can justify, to the satisfaction of DTSC, that a plan and/or report or portions thereof are not needed in the given site-specific situation, then DTSC may waive that requirement.

The scope and substance of the FI should be focused to fit the complexity of the site-specific situation. It is anticipated that Respondent of sites with complex environmental problems may need more extensive FIs than other facilities with less complex problems.

DTSC may require Respondent to conduct additional studies beyond what is discussed in the SOWs to meet the objectives of the FI. Respondent will furnish all personnel, materials, and services necessary to conduct the additional tasks.

A. Current Conditions Report

The Current Conditions Report must describe existing information pertinent to the facility including operations, processes, waste management, geology, hydrogeology, contamination, migration pathways, potential receptor populations and interim corrective measures. The required format for a current conditions report is described below. If some of this information does not exist, so indicate in the applicable section.

1. Introduction

1.1 Purpose

Describe the purpose of the current conditions report (e.g., summary and evaluation of existing information related to the facility; required as a component of FI).

1.2 Organization of Report

Describe how the report is organized.

2. Facility Description

Summarize background, current operations, waste management and products produced at the facility. Include a map that shows the general geographic location of the facility.

Describe current facility structures including any buildings, tanks, sumps, wells, waste management areas, landfills, ponds, process areas and storage areas.

Include detailed facility maps that clearly show current property lines, the owners of all adjacent property, surrounding land use (residential, commercial, agricultural, recreational, etc.), all tanks, buildings, process areas, utilities, paved areas, easements, rights-of-way, waste management areas, ponds, landfills, piles, underground tanks, wells and other facility features.

3. Facility History

3.1 Ownership History

Describe the ownership history of the facility.

3.2 Operational History

Describe in detail how facility operations, processes and products have changed over time (historical aerial photographs could be useful for this purpose).

3.3 Regulatory History

Describe all permits (including waste discharge requirements) requested or received, any enforcement actions taken by DTSC or designated agencies and any closure activities that are planned or underway.

3.4 Waste Generation

Describe all wastes (solid or hazardous) that have been generated at the facility. Include approximate waste volumes generated and summaries of any waste analysis data. Show how the waste stream (volume and chemical composition) has changed over time.

3.5 Waste Management

Describe in detail all past and current solid and hazardous waste treatment, storage and disposal activities at the facility, including but not limited to, unit physical description (e.g., dimensions and pavement), unit operational designs (e.g., treatment and/or storage capacity, dimensions), operating procedures (e.g., hazardous waste determination, waste treatment and/or storage activities, controls to identify and minimize the releases). Include a description of facility operations with a comprehensive Block Process Flow Diagram and description of process flow. Show how these activities have changed over time and indicate the current status. Make a clear distinction between active waste management units and older out of service waste management units. Identify which waste management units are regulated under or California Health and Safety Code.

Include maps showing all known past solid waste or hazardous waste treatment, storage, or disposal areas regardless of whether they were active on November 19, 1980 and all known past or present underground tanks or piping.

3.6 Spill and Discharge History

Provide approximate dates or periods of past product and waste spills and releases (i.e., from light fibrous materials, fire suppression activities, radioactive materials, compressed gas cylinders, etc.), identify the materials spilled and describe any response actions conducted. Include a summary of any sampling data generated as a result of the spill. Include a map showing approximate locations of spill areas at the facility.

3.7 Chronology of Critical Events

Provide a chronological list (including a brief description) of major events, communications, agreements, notices of violation, spills, discharges, releases, fires, and explosions that occurred throughout the facility's history.

4. Environmental Setting

4.1 Location/Land Use

Discuss facility size, location, and adjacent land use. Include a rough demographic profile of the human population who use or have access to the facility and adjacent lands. Provide approximate distance to nearest residential areas, schools, nursing homes, hospitals, parks, playgrounds, etc.

4.2 Local Ecology

Describe any endangered or threatened species near the facility. Include a description of the ecological setting on and adjacent to the facility. Provide approximate distance to nearest environmentally sensitive areas such as marsh lands, wetlands, streams, oceans, forests, etc.

4.3 Topography and Surface Drainage

Describe the regional and site-specific topography and surface drainage patterns that exist at the facility. Include a map that shows the topography and surface drainage depicting all waterways, wetlands, floodplains, water features, drainage patterns and surface water containment areas.

4.4 Climate

Discuss mean annual temperatures, temperature extremes, 25-year 24-hour maximum rainfall, average annual rainfall, prevailing wind direction, etc.

4.5 Surface Water Hydrology

Describe the facility's proximity (distance) and access to surface water bodies (e.g., coastal waters, lakes, rivers, creeks, drainage basins, floodplains, vernal pools, wetlands, etc.). Describe flows on-site that lead to holding basins, etc., and describe flows that leave the site.

4.6 Geology

Describe the regional and site-specific geology including stratigraphy and structure. Include a geologic map and cross-sections to show the subsurface structure. Cross-sections should be at a natural scale (vertical equals horizontal) and of sufficient detail to accurately plot cut and fills, alluvium, and structural features. Cross-sections should be taken on a grid pattern oriented normal to major geologic structure and spaced close enough to determine geology and ground water flow on a unit-by-unit basis.

4.7 Hydrogeology

Describe the regional and site specific hydrogeologic setting including any information concerning local aquifers, ground water levels, gradients, flow direction, hydraulic conductivity, and velocity. Include potentiometric surface contour maps. Describe the beneficial uses of the ground water (e.g., drinking water supply, agricultural water supply, etc.). Plot ground water elevations on the geologic cross-sections and indicate ground water flow directions and likely contaminant pathways. Describe temporal variations (seasonal and historical).

4.8 Ground Water Monitoring System

Describe the facility's ground water monitoring system including a table detailing the existing well construction. The table must, at a minimum, identify the following construction details for each well:

- Well ID
- Completion Date
- Drilling Method
- Borehole Diameter (inches)

- Well Casing Diameter and Material Type
- Measuring Point and Ground Elevation [feet Mean Sea Level (MSL)]
- Borehole Depth [feet Below Ground Surface (BGS)]
- Depth of Well (feet)
- Screened Interval (feet BGS) and Formation Screened
- Slot Size & Type (inches)
- Filter Pack Material
- Filter Pack Thickness and Spacing
- Type of Filter Pack Seal
- Thickness of Filter Pack Seal
- Sampling Pump System (dedicated or non-dedicated)
- Type of Pump and Depth in the Well
- Approximate Depth to Water (feet BGS)

If some of this information is not available, so indicate on the table with an "NA".

The monitoring well locations must be shown on the facility map (see Section A.2 of Attachment 4).

5. Existing Degree and Extent of Contamination

For each medium where the Permit or Order identifies a release (e.g., soil, ground water, surface water, air, etc.), describe the existing extent of contamination. This description must include all available monitoring data and qualitative information on the locations and levels of contamination at the facility (both onsite and offsite). Include a general assessment of the data quality, a map showing the location of all existing sampling points and potential source areas and contour maps showing any existing ground water plumes at the facility (if ground water release). Highlight potential ongoing release areas that would warrant use of interim corrective measures (see Section 8, Interim Corrective Measures).

5.1. Previous Investigations

List and briefly describe all previous investigations that have occurred at the facility, agencies (e.g., DTSC's Site Mitigation Branch, the Regional Water Quality

Control Board, etc.) which required and/or oversaw the investigations, and agency contacts.

6. Potential Migration Pathways

6.1 Physical Properties of Contaminants

Identify the applicable physical properties for each contaminant that may influence how the contaminant moves in the environment. These properties could include reactivity, melting point (degrees C), water solubility (mg/l), vapor pressure (mm/Hg), Henry's law constant (atm-m3/mol), density (g/cc), dynamic viscosity (cp), kinematic viscosity (cs), octanol/water partition coefficient (log Kow), soil organic carbon/water partition coefficient (log koc) and soil/water partition coefficients, etc. Include a table that summarizes the applicable physical properties for each contaminant.

6.2 Conceptual Site Model of Contaminant Migration

Develop a conceptual site model of contaminant migration to have a preliminary understanding of the site's potential risks to human health and the environment, and to assist in developing the facility investigation. The conceptual site model presents information about site conditions and potential impacts to receptors and may be updated as new information is obtained. The information can be provided in a schematic presentation or pictorially. The conceptual site model should illustrate possible contaminant transport mechanisms and exposure pathways from various media that may be affected: air, soil, sediments, and water, including soil vapor, groundwater, and surface water.

The conceptual site model consists of a working hypothesis of how the contaminants (including but not limited to dust, debris, and light fibrous materials) may move from the release source to the receptor population. The conceptual site model is also developed by looking at the applicable physical parameters for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to ground water, etc.).

Describe the phase (water, soil, gas, non-aqueous) and location where contaminants) are likely to be found (e.g., if a ground water contaminant has a low water solubility and a high density, then the contaminant will likely sink and be found at the bottom of the aquifer, phase: non-aqueous). Include a discussion of potential transformation reactions that could impact the type and number of contaminants (i.e., what additional contaminants could be expected as a result of biotic and abiotic transformation reactions given the existing soil conditions).

A typical conceptual site model should include a discussion similar to the following: benzene, ethylbenzene, toluene, and xylenes are potential contaminants at the facility. Based on their high vapor pressures and relatively low water solubilities (see Henry's Law constant), the primary fate of these compounds in surface soils or surface water is expected to be volatilization to the atmosphere and indoor air. These mono-cyclic aromatic hydrocarbons may leach from soils into ground water. The log koc (soil organic carbon/water partition coefficient) values for these compounds ranges from 1.9 to 4.0, indicating that sorption to organic matter in soils or sediments may occur only to a limited extent.

7. Potential Impacts of Existing Contamination

Describe the potential impacts on human health and the environment from any existing contamination and/or ongoing activities at the facility. This description must consider the possible impacts on sensitive ecosystems and endangered species as well as on local populations. Potential impacts from any releases to ground water, surface water, soil (including direct contact with contaminated surface soil) and air (including evaporation of volatile organic compounds from contaminated soil) must be discussed. If air could be a significant pathway, soil gas or vapor emissions and/or ambient air monitoring should be described.

7.1 Ground Water Releases

Identify all wells (municipal, domestic, agricultural, industrial, etc.) within a 1-mile radius of the facility. Include a summary of available water sampling data for any identified municipal, industrial, or domestic supply wells.

Develop a well inventory table that lists the following items for each identified well:

- Well Designation
- State ID
- Reported Owner
- Driller
- Date of Completion
- Original Use of Well
- Current Use of Well
- Drilling Method
- Borehole Diameter (inches)
- Casing Diameter (inches)
- Perforated Interval (feet) and Formation
- Gravel Pack Interval (feet)
- Total Well Depth (feet)
- Depth to Water (feet below ground surface)
- Date of Water Level Measurement

If some of this information is not available, so indicate on the table with an "NA".

Include a regional map showing the facility, ground water flow direction (if known) and the location of all identified wells within a 1-mile radius of the facility.

Identify and describe any potential ground water discharge to surface water bodies.

Identify and list all relevant and applicable water standards for the protection of human health and the environment (e.g., maximum contaminant levels, water quality standards, etc.).

7.2 Surface Water Releases

Discuss the facility's potential impact on surface water within a 2-mile radius of the facility. Describe the potential beneficial uses of the surface water (e.g., drinking water supply, recreational, agricultural, industrial, or environmentally sensitive). Identify all water supply intake points and contact areas within a 2-mile radius of the facility. Include a summary of the most recent water sampling data available

for each of the identified water supply intake points. Include a description of the biota in surface water bodies on, adjacent to, or which can be potentially affected by the release. Also summarize any available sediment sampling data.

Include a regional map showing the facility, surface water flow direction, beneficial use areas, and the location of any identified water supply intake points or contact areas that are within a 2-mile radius of the facility.

7.3 Sensitive Ecosystems/Habitats

Discuss the facility's potential impact on sensitive ecosystems.

8. Interim Corrective Measures and Stabilization Assessment

Identify all corrective measures that were or are being undertaken at the facility to stabilize contaminant releases. Describe the objectives of the corrective measures including how the measure is mitigating a potential threat to human health and the environment. Summarize the design features of the corrective measure. Include a schedule for completing any ongoing or future work.

Identify and describe potential interim corrective measure alternatives that could be implemented immediately to stabilize any ongoing releases and/or prevent further migration of contaminants and control source areas.

9. Data Needs

Assess amount and quality of existing data concerning facility and determine what additional information must be collected to meet the objectives of the FI. This assessment must identify any additional information that may be needed to (1) support development of interim measures for early action and (2) adequately evaluate and compare corrective measures alternatives (e.g., field work, treatability studies, computer modeling, literature searches, vendor contacts, etc.). For example, if soil vapor extraction (SVE) is a likely option to address contamination at the facility, then the FI should collect applicable field data to assess SVE (e.g., soil gas analysis, depth to ground water, etc.). The FI Workplan must detail how this additional information will be collected.

10. References

Provide a list of references cited in the Current Conditions Report.

B. Facility Investigation Workplan

The FI Workplan shall define the procedures necessary to:

- Gather all necessary data to determine where interim measures are needed and to support the use of interim measures to address immediate threats to human health and/or the environment, to prevent or minimize the spread of contaminants, to control sources of contamination and to accelerate the corrective action process (required for all releases).
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any ground water contamination in and around the facility (only required for releases to ground water)
- Characterize the geology and hydrogeology in and around the facility (only required for releases to ground water and possibly for releases to soil).
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any soil contamination in and around the facility (only required for releases to soil).
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any soil gas contamination in and around the facility (may be required for releases to ground water and/or soil depending on the circumstances).
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any surface water contamination (includes surface water sediments) at the facility (only required for releases to surface water).
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any air releases at the facility (only required for air releases);
- Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of light fibrous material contamination in and around the facility (only required for releases of light fibrous materials).
- Characterize any potential sources of contamination (required for all releases).

- Characterize the potential pathways of contaminant migration (required for all releases).
- Identify any actual or potential receptors (required for all releases).
- Gather all data to support a risk and/or ecological assessment (if required); and
- Gather all necessary data to support the Corrective Measures Study (required for all releases). This could include conducting treatability, pilot, laboratory and/or bench scale studies to assess the effectiveness of a treatment method.

The FI Workplan shall describe all aspects of the investigation, including project management, sampling, and analysis, well drilling and installation and quality assurance and quality control. If the scope of the investigation is such that more than one phase is necessary, the "Phase 1" FI Workplan must include a summary description of each phase. For example, the first phase of a FI could be used to gather information necessary to focus the second phase into key areas of the facility that need further investigation.

The required format for a FI Workplan is described below:

1. Introduction

Briefly introduce the FI Workplan. Discuss the Order or Permit requiring the FI and how the FI Workplan is organized.

2. Investigation Objectives

2.1. Project Objectives

Describe the overall objectives and critical elements of the FI. State the general information needed from the site (e.g., soil chemistry, hydraulic conductivity of aquifer, stratigraphy, ground water flow direction, identification of potential receptors, etc.). The general information should be consistent with the objectives of the FI and the data needs identified in the Current Conditions Report.

2.2. Data Quality Objectives

Provide data quality objectives that identify what data are needed and the intended use of the data.

3. Project Management

Describe how the investigation will be managed, including the following information:

- Organization chart showing key personnel, levels of authority and lines of communication;
- Project Schedule; and
- Estimated Project Budget.

Identify the individuals or positions who are responsible for: project management, field activities, laboratory analysis, database management, overall quality assurance, data validation, etc. Include a description of qualifications for personnel performing or directing the FI, including contractor personnel.

4. Facility Background

Summarize existing contamination (e.g., contaminants, concentrations, etc.), local hydrogeologic setting and any other areas of concern at the facility. Include a map showing the general geographic location of the facility and a more detailed facility map showing the areas of contamination. Provide a reference to the Current Conditions Report and/or other applicable documents as a source of additional information.

5. Field Investigation

5.1. <u>Task Description</u>

Provide a qualitative description of each investigation task. Example tasks may include, but are not limited to the following:

Task 1: Surface Soil Sampling

Task 2: Surface Geophysics, Subsurface Soil Boring, and Borehole Geophysics

Task 3: Data Gathering to Support Interim Corrective Measures

Task 4: Monitoring Well Installation

Task 5: Aquifer Testing

Task 6: Ground Water Sampling

Task 7: Potential Receptor Identification

Task 8: Treatability Studies

5.2. Rationale for Sampling

Describe where all samples will be collected (location and depth), types of media that will be sampled and the analytical parameters. Explain the rationale for each sampling point, the total number of sampling points, and any statistical approach used to select these points. The conceptual site model of contaminant migration developed in the Current Conditions Report should be considered when selecting sampling locations and depths. If some possible sampling points are excluded, explain why. Describe any field screening techniques that will be used to identify samples for laboratory analysis. Include the rationale for use of field screening techniques and criteria for sample selection.

5.2.1 Background Samples

Background samples should be analyzed for the complete set of parameters for each medium; treat sediments, surface soils and subsurface soils as separate media. Background samples are collected, numbered, packaged, and sealed in the same manner as other samples. For long term and/or especially large projects, it is recommended that 10% of samples collected be from background locations.

5.3. Sample Analysis

List and discuss all analyses proposed for the project. Include a table that summarizes the following information for each analysis to be performed:

- Analytical Parameters
- Analytical Method Reference Number (from USEPA SW 846)
- Sample Preparation and/or Extraction Method Reference Number (from USEPA SW 846)

- Detection and Practical Quantitation Limits (Data above the detection limit but below the practical quantitation limit must be reported with the estimated concentration.)

Discuss the rationale for selection of the analytical parameters. The rationale must relate to site history and the FI objectives. The achievable detection limits or quantitation limits stated in the selected methods must be adequate for valid comparisons of analytical results against any action levels or standards. For example, the objective may be to collect ground water data for comparison with Maximum Contaminant Levels (MCLs) or Regional Screening Levels (RSLs). If this were the case, it would be important to ensure that any ground water test methods had detection limits below the MCLs or RSLs. Give an explanation if all samples from the same medium will not be analyzed for the same parameters.

Provide the name(s) of the laboratory(s) that will be doing the analytical work. Indicate any special certifications or ratings of the laboratory. Describe the steps that will be taken to select and pre-qualify analytical laboratories to be used including any previous audits and/or other criteria. If a definite laboratory has not yet been selected, list at least three (3) laboratories that are being considered for the analytical work.

5.4. Sample Collection Procedures

Describe how sampling points will be selected in the field, and how these locations will be documented and marked for future reference. If a sampling grid will be used, describe the dimensions, and lay out planned for the grid.

Outline sequentially or step-by-step the procedure for collecting a sample for each medium and each different sampling technique. Include a description of sampling equipment (including materials of construction), field measurements, sample preservation, housekeeping/ cleanliness techniques and well purging procedures. The procedure described must ensure that a representative sample is collected, and that sample handling does not result in cross contamination or unnecessary

loss of contaminants. Special care in sample handling for volatile organic samples must be addressed.

Describe how and when duplicates, blanks, laboratory quality control samples and background samples will be collected. If samples will be filtered, describe filtration equipment and procedures.

Respondent must include sufficient maps and tables to fully describe the sampling effort. This shall include, at a minimum, a map showing all proposed sampling locations and tables that contain the following information:

Sample Collection Table:

- Sampling Location/Interval
- Analytical Parameters (e.g., volatile organic compounds)
- Analytical Method Number
- Medium
- Preservation Method
- Holding Times (as specified in USEPA SW 846)
- Containers (quantity, size, type plus footnotes that discuss source and grade of containers)

Sample Summary Table:

- Sample Description/Area (include QC samples)
- Analytical Parameters
- Analytical Method Number
- Preparation or Extraction Method Number
- Medium
- Number of Sample Sites
- Number of Analyses

5.4.1 Equipment Decontamination

Describe the decontamination procedure for all drilling, sampling equipment (including metal sleeves), and field-parameter testing equipment.

The following is a recommended generic procedure for decontamination of sampling equipment:

- Wash with non-phosphate detergent
- Tap water rinse
- 0.1 Mole nitric acid rinse (when cross contamination from metals is a concern)
- Deionized/distilled water rinse
- Pesticide grade solvent rinse (when semi volatiles and non-volatile organic contamination may be present)
- Deionized/distilled water rinse (twice)
- Organic free water rinse [High Performance Liquid Chromatography (HPLC) grade]

The above procedure is not appropriate for every field condition. Clearly document the decontamination procedures.

5.4.2 Equipment Calibration and Maintenance

Logbooks or pre-formatted calibration worksheets should be maintained for major field instruments, to document servicing, maintenance, and instrument modification. The calibration, maintenance and operating procedures for all instruments, equipment and sampling tools must be based upon manufacturer's instructions. List all field equipment to be used, specify the maintenance/calibration frequency for each instrument and the calibration procedures (referenced in text and included in appendices).

5.4.3 Sample Packaging and Shipment

Describe how samples will be packaged and shipped. All applicable Department of Transportation regulations must be followed.

5.4.4 Sample Documentation

Discuss the use of all paperwork including field notebooks, record logs, photographs, sample paperwork, and Chain of Custody forms (include a blank copy in FI Workplan Appendices) and seals.

Describe how sample containers will be labeled and provide an example label if available. At a minimum, each sample container label should include project ID, sample location, analytical parameters, date sampled, and any preservative added to the sample.

A bound field logbook must be maintained by the sampling team to provide a daily record of events. Field logbooks shall provide the means of recording all data regarding sample collection. All documentation in field books must be made in permanent ink. If an error is made, corrections must be made by crossing a line through the error and entering the correct information. Changes must be initialed, no entries shall be obliterated or rendered unreadable. Entries in the logbook must include, at a minimum, the following for each day's sampling:

- Date
- Starting Time
- Meteorological Conditions
- Field Personnel Present
- Level of Personal Protection
- Site Identification
- Field Observations/Parameters
- Sample Identification Numbers
- Location and Description of Sampling Points
- Number of Samples Collected
- Time of Sample Collection
- Signature of Person Making the Entry
- Observation of Sample Characteristics
- Photo Log
- Deviations

5.4.5 Disposal of Contaminated Materials

Describe the storage and disposal methods for all contaminated cuttings, well development and purge water, disposable equipment, decontamination water,

and any other contaminated materials. The waste material must be disposed of in a manner consistent with local, state, and federal regulations.

5.4.6 Standard Operating Procedures

If Standard Operating Procedures (SOPs) are referenced, the relevant procedure must be summarized in the FI Workplan. The SOP must be specific to the type of tasks proposed and be clearly referenced in the FI Workplan. The SOP must also be directly applicable, as written, to the FI Workplan; otherwise, modifications to the SOP must be discussed. Include the full SOP description in the FI Workplan appendix.

5.5. Well Construction and Aquifer Testing

When new monitoring wells (or piezometers) are proposed, describe the drilling method, well design and construction details (e.g., depth of well, screen length, slot size, filter pack material, etc.) and well development procedures. Describe the rationale for proposed well locations and selection of all well design and construction criteria (i.e., provide rationale for selection of slot size and screen length).

When aquifer testing is proposed, describe the testing procedures, flow rates, which wells are involved, test periods, how water levels will be measured, and any other pertinent information.

6. Quality Assurance and Quality Control

Quality control checks of field and laboratory sampling and analysis serve two purposes: to document the data quality, and to identify areas of weakness within the measurement process which need correction.

Include a summary table of data quality assurance objectives that, at a minimum, lists:

- Analysis Group (e.g., volatile organic compounds)
- Medium
- Practical Quantitation Limits (PQL) and Method Detection Limits (MDL)

- Spike Recovery Control Limits (%R)
- Duplicate Control Limits +/- Relative Percent Difference (RPD)
- QA Sample Frequency
- Data Validation

A reference may note the specific pages from USEPA's SW 846 Guidance Document that list the test method objectives for precision and accuracy. If the field and laboratory numerical data quality objectives for precision are the same and presented on a single table, then a statement should be made to this effect and added as a footnote to the table (e.g., "These limits apply to both field and laboratory duplicates"). Include a copy of the analytical laboratory quality assurance/quality control plan in the appendices of the FI Workplan and provide the equations for calculating precision and accuracy.

6.1 Field Quality Control Samples

6.1.1 Field Duplicates

Duplicates are additional samples that must be collected to check for sampling and analytical precision. Duplicate samples for all parameters and media must be collected at a frequency of at least one sample per week or 10 percent of all field samples, whichever is greater.

Duplicates should be collected from points which are known or suspected to be contaminated. For large projects, duplicates should be spread out over the entire site and collected at regular intervals.

Duplicates must be collected, numbered, packaged, and sealed in the same manner as other samples; duplicate samples are assigned separate sample numbers and submitted blind to the laboratory.

6.1.2 Blank Samples

Blanks are samples that must be collected to check for possible cross-contamination during sample collection and shipment and in the laboratory. Blank samples should be analyzed for all parameters being evaluated. At least

one blank sample per day must be done for all water and air sampling. Additionally, field blanks are required for soil sampling if non-dedicated field equipment is being used for sample collection.

Blank samples must be prepared using analytically certified, organic-free (HPLC-grade) water for organic parameters and metal-free (deionized-distilled) water for inorganic parameters. Blanks must be collected, numbered, packaged, and sealed in the same manner as other samples; blank samples are assigned separate sample numbers and submitted blind to the laboratory. The following types of blank samples may be required:

- Equipment Blank: An equipment blank must be collected when sampling equipment (e.g., bladder pump) or a sample collection vessel (e.g., a bailer or beaker) is decontaminated and reused in the field. Use the appropriate "blank" water to rinse the sampling equipment after the equipment has been decontaminated and then collect this water in the proper sample containers.
- Field Bottle Blank: This type of blank must be collected when sampling equipment decontamination is not necessary. The field bottle blank is obtained by pouring the appropriate "blank" water into a container at a sampling point.

6.2 Laboratory Quality Control Samples

Laboratories routinely perform matrix spike and laboratory duplicate analysis on field samples as a quality control check. A minimum of one field sample per week or 1 per 20 samples (including field blanks and duplicates), whichever is greater, must be designated as the "Lab QC Sample" for the matrix and laboratory duplicate analysis.

Laboratory quality control samples should be selected from sampling points which are suspected to be moderately contaminated. Label the bottles and all copies of the paperwork as "Lab QC Sample"; the laboratory must know that this sample is for their QC analyses. The first laboratory QC sample of the sampling effort

should be part of the first- or second-day's shipment. Subsequent laboratory QC samples should be spread out over the entire sampling effort.

For water media, 2-3 times the normal sample volume must be collected for the laboratory QC sample. Additional volume is usually not necessary for soil samples.

6.3 Performance System Audits by Respondent

This section should describe any internal performance and/or system audit which Respondent will conduct to monitor the capability and performance of the project. The extent of the audit program should reflect the data quality needs and intended data uses. Audits are used to quickly identify and correct problems thus preventing and/or reducing costly errors. For example, a performance audit could include monitoring field activities to ensure consistency with the workplan. If the audit strategy has already been addressed in a QA program plan or standard operating procedure, cite the appropriate section which contains the information.

7. Data Management

Describe how investigation data and results will be evaluated, documented, and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data. To document any quality assurance anomalies, the FI QC Summary Forms must be completed by the analytical laboratory and submitted as part of the FI Report. In addition, provide examples of any other forms or checklists to be used.

Identify and discuss personnel and data management responsibilities, all field, laboratory, and other data to be recorded and maintained, and any statistical methods that may be used to manipulate the data.

8. References

Provide a list of references cited in the FI Workplan.

C. Facility Investigation Report

A FI Report must be prepared that describes the entire site investigation and presents the basic results. The FI Report must clearly present an evaluation of investigation results (e.g., all potential contaminant source areas must be identified, potential migration pathways must be described, and affected media shown, etc.).

The FI Report must also include an evaluation of the completeness of the investigation and indicate if additional work is needed. This work could include additional investigation activities and/or interim corrective measures to stabilize contaminant release areas and limit contaminant migration. If additional work is needed, Respondent must submit a Phase 2 FI Workplan and/or Interim Corrective Measures Workplan must be submitted to DTSC along with the FI Report.

At a minimum, the FI Report must include:

- A summary of investigation results (include tables that summarize analytical results).
- A complete description of the investigation, including all data necessary to understand the project in its entirety including all investigative methods and procedures.
- A discussion of key decision points encountered and resolved during the investigation.
- Graphical displays such as isopleths, potentiometric surface maps, cross-sections, plume contour maps (showing concentration levels, isoconcentration contours), facility maps (showing sample locations, etc.) and regional maps (showing receptor areas, water supply wells, etc.) that describe report results. Highlight important facts such as geologic features that may affect contaminant transport.
- Tables that list all chemistry data for each medium investigated.
- An analysis of current and existing ground water data to illustrate temporal changes for both water chemistry and piezometric data (use graphics whenever possible).

- A description of potential or known impacts on human and environmental receptors from releases at the facility. Depending on the site-specific circumstances, this analysis could be based on the results from contaminant dispersion models if field validation is performed.
- A discussion of any upset conditions that occurred during any sampling events or laboratory analysis that may influence the results. The discussion must include any problems with the chain of custody procedures, sample holding times, sample preservation, handling and transport procedures, field equipment calibration and handling, field blank results that show potential sample contamination and any field duplicate results that indicate a potential problem. Summary tables must be provided that show the upset condition and the samples that could be impacted. The FI QC Summary Forms must be completed by the analytical laboratory and submitted as part of the FI Report.
- Assessment of the entire QA/QC program effectiveness.
- Data validation results should be documented in the FI Report.

In addition to the FI Report, DTSC may require Respondent to submit the analytical results (database) in an electronic format (DTSC will specify the format). All raw laboratory and field data (e.g., analytical reports) must be kept at the facility and be made available or sent to the DTSC upon request.

In the event that DTSC determines that further action is needed, the following additional activities may be requested.

ATTACHMENT 5:
SCOPE OF WORK FOR A CORRECTIVE MEASURES STUDY

PURPOSE

The purpose of the Corrective Measures Study (CMS) is to identify and evaluate potential remedial alternatives to address contaminant releases from a facility.

SCOPE

A Corrective Measures Study Workplan and a Corrective Measures Study Report are, unless otherwise specified by the Department of Toxic Substances Control (DTSC), required elements of the CMS. The Scope of Work (SOW) for the Corrective Measures Study Workplan and Report describe what should be included in each document. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If Respondent can justify, to the satisfaction of DTSC, that sections of a plan and/or report are not needed in the given site-specific situation, then DTSC may waive that requirement.

The scope and substance of the CMS should be focused to fit the complexity of the site-specific situation. It is anticipated that Respondent of sites with complex environmental problems may need to evaluate several technologies and corrective measure alternatives. For other facilities, however, it may be appropriate to evaluate a single corrective measure alternative.

DTSC may require Respondent to conduct additional studies beyond what is discussed in the SOWs to support the CMS. Respondent will furnish all personnel, materials, and services necessary to conduct the additional tasks. The SOW for the Corrective Measures Study Workplan and Report are specified below:

A. Corrective Measures Study Workplan

The purpose of the Corrective Measures Study (CMS) Workplan is to specify how the CMS Report will be prepared. The CMS Workplan shall, at a minimum, include the following elements:

1. A brief project summary.
2. A site-specific description of the overall purpose of the CMS.
3. A description of the proposed media cleanup standards and points of compliance that will be used in the corrective measures study report. Include the justification and supporting rationale for the proposed media cleanup standards and points of compliance. The proposed media cleanup standards must be based on available promulgated federal and state cleanup standards, risk-based analysis, data and information gathered during the corrective action process (e.g., from Facility Investigation, etc.), and/or information from other applicable guidance documents. DTSC may require that Respondent conduct a risk assessment to gather information for establishing cleanup standards. Based on the CMS Report and other information including public comments, DTSC will establish final cleanup standards and points of compliance as part of the remedy selection process.
4. A description of the specific corrective measure technologies and/or corrective measure alternatives which will be studied.
5. A description of the general approach to investigating and evaluating potential corrective measures.
6. A detailed description of any proposed treatability, pilot, laboratory and/or bench scale studies. Proposed studies must be further detailed in either the CMS Workplan or in separate workplans. Submittal times for separate workplans must be included in the CMS Workplan project schedule.
7. A proposed outline for the CMS Report including a description of how information will be presented.

8. A description of overall project management including overall approach, levels of authority (include organization chart), lines of communication, budget, and personnel. Include a description of qualifications for personnel directing or performing the work.

9. A project schedule that specifies all significant steps in the process and when key documents (e.g., CMS Report) are to be submitted to DTSC.

B. Corrective Measures Study Report

The CMS Report shall, at a minimum, include the following elements:

1. Introduction/Purpose

   Describe the purpose and intent of the document.

2. Description of Current Conditions

   Respondent shall include a brief discussion of any new information that has been developed since the Facility Investigation Report was finalized. This discussion should concentrate on those issues which could significantly affect the evaluation and selection of the corrective measure alternative(s).

3. Proposed Media Cleanup Standards

   Respondent shall describe and justify the proposed media cleanup standards and points of compliance.

4. Identification and Screening of Corrective Measure Technologies

   a. <u>Identification</u>

      List and briefly describe potentially applicable technologies for each affected media that may be used to achieve the media cleanup standards. Respondent should consider including a table that summarizes the available technologies.

Respondent should consider innovative treatment technologies, especially in situations where there are a limited number of applicable corrective measure technologies. Innovative technologies are defined as those technologies for source control other than incineration, solidification/stabilization and pumping with conventional treatment for contaminated ground water. Innovative treatment technologies may require extra initial effort to gather information, analyze options and to adapt the technology to site specific situations. However, in the long run, innovative treatment technologies could be more cost effective. Treatability studies and on-site pilot scale studies may be necessary for evaluating innovative treatment technologies.

b. Screening

Technologies must be screened to eliminate those that may prove unfeasible to implement given the existing set of waste and site-specific conditions. The screening is accomplished by evaluating technology limitations (e.g., for volume, area, contaminant concentrations, interferences, etc.) and using contaminant and site characterization information from the Facility Investigation to screen out technologies that cannot be fully implemented at the facility. The screening process must focus on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions (e.g., depth to ground water and aquitards).

As with all decisions during the CMS, the screening of technologies must be fully documented. This is especially true if the screening step indicates that only one corrective action technology should proceed to the next step and be evaluated in detail. List the corrective action technologies selected for further evaluation. Also document the reasons for excluding any corrective action technologies. Respondent should consider including a table that summarizes the findings.

5. Corrective Measure Alternative Development

Assemble the technologies that pass the screening step into specific alternatives that have potential to meet the corrective action objectives. Options for addressing

less complex sites could be relatively straightforward and may only require evaluation of a single or limited number of alternatives.

Each alternative may consist of an individual technology or a combination of technologies used in sequence (e.g., treatment train). Depending on the site-specific situation, different alternatives may be considered for separate areas of the facility. List and briefly describe each corrective measure alternative.

6. Evaluation of Corrective Measure Alternatives

The four corrective action standards and five remedy selection decision factors described below shall be used to evaluate the corrective measure alternatives. All alternatives must meet the corrective action standards before the remedy selection decision factors are used for further evaluation.

The corrective action standards are as follows:

- Be protective of human health and the environment.
- Attain media cleanup standards.
- Control the source(s) of releases to reduce or eliminate, to the extent practicable, further releases of hazardous wastes (including hazardous constituents) that may pose a threat to human health and the environment; and
- Comply with any applicable federal, state, and local standards for management of wastes.

The remedy selection decision factors are as follows:

- Short- and Long-Term Effectiveness.
- Reduction of Toxicity, Mobility and/or Volume.
- Long-Term Reliability.
- Implementability; and
- Cost.

The corrective action standards and decision factors are described in further detail below.

a. Be Protective of Human Health and the Environment

   Describe in detail how each corrective measure alternative is protective of human health and the environment.

   This standard for protection of human health and the environment is a general mandate of the statute. The standard requires that remedies include any measures that are needed to be protective. These measures may or may not be directly related to media cleanup, source control, or management of wastes. An example would be a requirement to provide alternative drinking water supplies to prevent exposures to a contaminated drinking water supply.

b. Attain Media Cleanup Standards

   Describe in detail each corrective measure alternatives ability to meet the proposed media cleanup standards.

c. Control the Sources of Releases

   Describe in detail each corrective measure alternatives ability to control the sources of releases.

   A critical objective of any remedy must be to stop further environmental degradation by controlling or eliminating further releases that may pose a threat to human health and the environment. Unless source control measures are taken, efforts to cleanup releases may be ineffective or, at best, will essentially involve a perpetual cleanup. Therefore, an effective source control program is essential to ensure the long-term effectiveness and protectiveness of the corrective action effort.

   The source control standard is not intended to mandate a specific remedy or class of remedies. Instead, Respondent is encouraged to examine a wide range of options. This standard should not be interpreted to preclude the equal consideration of using other protective remedies to control the source,

such as partial waste removal, capping, slurry walls, in-situ treatment/stabilization, and consolidation.

d. Comply with Any Applicable Standards for Management of Wastes

Discuss how any specific waste management activities will be conducted in compliance with all applicable state or federal regulations (e.g., Corrective Action Management Unit closure requirements, land disposal restrictions).

e. Short- and Long-Term Effectiveness

Each corrective measure alternative must be evaluated with regard to its effectiveness in protecting human health and the environment and meeting the proposed media cleanup standards. Both short- and long-term components of effectiveness must be evaluated; short-term referring to the construction and implementation period, and long-term referring to the period after the remedial action is complete. Estimate approximately how much time it will take to implement each corrective measure alternative, the length of time before initial beneficial results are obtained, and the length of time required to achieve the proposed media cleanup standards.

The evaluation of short-term effectiveness must include possible threats to the safety of nearby communities, workers, and environmentally sensitive areas (e.g., oceans, wetlands) during construction of the corrective measure alternative. Factors to consider are fire, explosion, exposure to hazardous substances and potential threats associated with treatment, excavation, transportation and re-disposal or containment of waste material. Laboratory and/or field studies are extremely useful in estimating the effectiveness of corrective measures and should be used whenever possible.

The evaluation of long-term effectiveness must include possible threats to the safety of nearby communities, workers, and environmentally sensitive areas (e.g., oceans, wetlands) during operation of the corrective measure alternative.

f. Reduction of Toxicity, Mobility and/or Volume

Each corrective measure alternative must be evaluated for its ability to reduce the toxicity, mobility, and/or volume of the contaminated media. Reduction in toxicity, mobility, and/or volume refers to changes in one or more characteristics of the contaminated media using corrective measures that decrease the inherent threats associated with the media.

Estimate how much the corrective measure alternative will reduce the waste toxicity, volume and/or mobility (compare initial site conditions to post-corrective measure conditions). In general, DTSC strongly prefers corrective measures that have a high degree of permanence and reduce the contaminant toxicity, mobility, and volume through treatment.

g. Long-Term Reliability

Each corrective measure alternative must be evaluated with regards to its long-term reliability. This evaluation includes consideration of operation and maintenance requirements.

Demonstrated and expected reliability is a way of assessing the risk and effect of failure. Discuss whether the technology or combination of technologies have been used effectively together under analogous site conditions, whether failure of any one technology in the alternative has an impact on receptors or contaminant migration, and whether the alternative would have the flexibility to deal with uncontrollable changes at the site (e.g., heavy rain storms, earthquakes, etc.).

Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements must also be considered.

Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure alternative shall be evaluated in terms of the projected useful life of the overall alternative and of its component technologies. Useful life is defined as the length of time the necessary or required level of effectiveness can be maintained.

h. Implementability of Corrective Measure Alternatives

The implementability criterion addresses the technical and administrative feasibility of implementing a corrective measure alternative and the availability of various services and materials needed during implementation. Each corrective measure alternative must be evaluated using the following criteria:

- Construction and Operation: Corrective measure alternatives must be feasible to implement given the existing set of waste and site-specific conditions. This evaluation was initially done for specific technologies during the screening process and is addressed again in this detailed analysis of the alternative as a whole. It is not intended that the screening process be repeated here, but instead to highlight key differences and/or changes from the screening analysis that may result from combining technologies.
- Administrative Feasibility: Discuss the administrative activities needed to implement the corrective measure alternative (e.g., permits, public acceptance, rights of way, off-site approvals, etc.).
- Availability of Services and Materials: Discuss the availability of adequate off-site treatment, storage capacity, disposal services, needed technical services and materials, and the availability of prospective technologies for each corrective measure alternative.

i. Cost

Develop a preliminary cost estimate for each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall

include both capital and operation and maintenance costs. Include a description of how the costs were estimated and what assumptions were used.

- The preliminary capital cost estimate must consider all key costs including, at a minimum, costs for engineering, mobilization, demobilization, site preparation, construction, materials, labor, equipment purchase and rental, sampling, analysis, waste disposal, permitting and health and safety measures.
- The preliminary operation and maintenance cost estimate must consider all key costs including, at a minimum, costs for labor, training, sampling, analysis, maintenance materials, utilities, waste disposal, waste treatment, permitting and health and safety measures.
- Calculate the net present value of preliminary capital and operation and maintenance costs for each corrective measure alternative.

7. Respondent's Recommended Corrective Measure Alternative

Respondent may recommend a preferred corrective measure alternative for consideration by DTSC. Such a recommendation should include a description and supporting rationale for the preferred alternative that is consistent with the corrective action standards and remedy selection decision factors discussed above.

Based on the CMS Report and other information including public comments, DTSC will establish final cleanup standards, points of compliance and will select a final remedy for the facility.

ATTACHMENT 6:
SCOPE OF WORK FOR CORRECTIVE MEASURES IMPLEMENTATION

PURPOSE

The purpose of the Corrective Measures Implementation (CMI) program is to design, construct, operate, maintain, and monitor the performance of the corrective measure or measures selected by DTSC. Corrective measures are intended to protect human health and/or the environment from hazardous waste releases from the Facility. Respondent will furnish all personnel, materials, and services necessary to implement the corrective measures program.

SCOPE

The documents required for Corrective Measures Implementation are, unless the Department of Toxic Substances Control (DTSC) specifies otherwise, a Corrective Measures Implementation Workplan, Operation and Maintenance Plan, Draft Plans and Specifications, Final Plans and Specifications, Construction Workplan, Construction Completion Report and Corrective Measure Completion Report. The scope of work (SOW) for each document is specified below. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If Respondent can justify, to the satisfaction of DTSC, that a plan and/or report or portions thereof are not needed in the given site-specific situation, then DTSC may waive that requirement.

The scope and substance of the CMI should be focused to fit the complexity of the site-specific situation. Not all the documents included in the CMI SOW may be needed for every facility.

DTSC may require Respondent to conduct additional studies beyond what is discussed in the SOWs to support the CMI program. Respondent will furnish all personnel, materials, and services necessary to conduct the additional tasks.

A. Corrective Measures Implementation Workplan

Respondent shall prepare a CMI Workplan that clearly describes the size, shape, form, and content of the proposed corrective measure, the key components or elements that are needed, describes the designers vision of the corrective measure in the form of conceptual drawings and schematics, and includes procedures and schedules for implementing the corrective measure(s).

Note that more than one CMI Workplan may be needed in situations where there is a complex site with multiple technologies being employed at different locations. The CMI Workplan must be approved by DTSC prior to implementation. The CMI Workplan must, at a minimum, include the following elements:

1. Introduction/Purpose

   Describe the purpose of the document and provide a summary description of the project.

2. Media Cleanup Standards

   Discuss the media cleanup standards for the facility.

3. Conceptual Site Model of Contaminant Migration

   Respondent must present a conceptual site model of the contaminant migration to develop a preliminary understanding of the site's potential risks to human health and the environment, and to assist in developing the corrective measures study. The conceptual site model presents information about site conditions and potential impacts to receptors and may be updated as new information is obtained. The information can be provided in a schematic presentation or pictorially. The conceptual site model should illustrate possible contaminant transport mechanisms and exposure pathways from various media that may be affected: air, soil, sediments, and water, including soil vapor, groundwater, and surface water.

   The conceptual site model also consists of a working hypothesis of how the contaminants (including but not limited to dust, debris, and light fibrous materials) may move from the release source to the receptor population. The conceptual site

model is developed by looking at the applicable physical parameters (e.g., water solubility, density, Henry's Law Constant, etc.) for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to ground water, etc.). Describe the phase (water, soil, gas, non-aqueous) and location where contaminants are likely to be found. This analysis may have already been done as part of earlier work (e.g., Current Conditions Report). If this is the case, then provide a summary of the conceptual site model with a reference to the earlier document. If not, then field validation of the conceptual site model is required.

4. Description of Corrective Measures

   Considering the conceptual site model of contaminant migration, qualitatively describe what the corrective measure is supposed to do and how it will function at the Facility. Discuss the constructability of the corrective measure and its ability to meet the corrective measure objectives.

5. Data Sufficiency

   Review existing data needed to support the design effort and establish whether there are sufficient accurate data available for this purpose. Respondent must summarize the assessment findings and specify any additional data needed to complete the corrective measure design. DTSC may require or Respondent may propose that sampling and analysis plans and/or treatability study workplans be developed to obtain the additional data. Submittal times for any new sampling and analysis plans and/or treatability study workplans must be included in the project schedule.

6. Project Management

   Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure design and implementation effort (including contractor personnel).

7. Project Schedule

   The project schedule must specify all significant steps in the process and when all CMI deliverables (e.g., Operation and Maintenance Plan, Corrective Measure Construction Workplan, etc.) are to be submitted to DTSC.

8. Design Criteria

   Specify performance requirements for the overall corrective measure and for each major component. Respondent must select equipment that meets the performance requirements.

9. Design Basis

   Discuss the process and methods for designing all major components of the corrective measure. Discuss the significant assumptions made and possible sources of error. Provide justification for the assumptions.

10. Conceptual Process/Schematic Diagrams.

11. Site plan showing preliminary plant layout and/or treatment area.

12. Tables listing number and type of major components with approximate dimensions.

13. Tables giving preliminary mass balances.

14. Site safety and security provisions (e.g., fences, fire control, etc.).

15. Waste Management Practices

    Describe the wastes generated by the construction of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

16. Required Permits

    List and describe the permits needed to construct and operate the corrective measure. Indicate on the project schedule when the permit applications will be submitted to the applicable agencies and an estimate of the permit issuance date.

17. Long-Lead Procurement Considerations

    Respondent shall prepare a list of any elements or components of the corrective measure that will require custom fabrication or for some other reason must be considered as long-lead procurement items. The list must include the reason why the items are considered long-lead items, the length of time necessary for procurement, and recognized sources of such procurement.

18. Appendices including:

    a. Design Data - Tabulations of significant data and assumptions used in the design effort.
    b. Equations - List and describe the source of major equations used in the design process.
    c. Sample Calculations - Present and explain one example calculation for significant or unique design calculations; and
    d. Laboratory or Field Test Results.

B. Operation and Maintenance Plan

Respondent shall prepare an Operation and Maintenance (O&M) Plan that includes a strategy and procedures for performing operations, long term maintenance, and monitoring of the corrective measure. A draft O&M Plan shall be submitted to DTSC simultaneously with the draft Plans and Specifications. A final O&M Plan shall be submitted to DTSC simultaneously with the final Plans and Specifications. The O&M Plan shall, at a minimum, include the following elements:

1. Introduction/Purpose

   Describe the purpose of the document and provide a summary description of the project.

2. Project Management

   Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will operate and maintain the corrective measures (including contractor personnel).

3. System Description

   Describe the corrective measure and identify significant equipment.

4. Personnel Training

   Describe the training process for O&M personnel. Respondent shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.

5. Start-Up Procedures

   Describe system start-up procedures including and operational testing.

6. Operation and Maintenance Procedures

   Describe normal operation and maintenance procedures including:

   a. Description of tasks for operation.

   b. Description of tasks for maintenance;

   c. Description of prescribed treatment or operation conditions; and

   d. Schedule showing frequency of each O&M task.

7. Replacement schedule for equipment and installed components.

8. Waste Management Practices

Describe the wastes generated by operation of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

9. Sampling and Monitoring

Sampling and monitoring activities may be needed for effective operation and maintenance of the corrective measure. If sampling activities are necessary, the O&M Plan must include a complete sampling and analysis section which specifies at a minimum the following information:

a. Description and purpose of monitoring tasks.

b. Data quality objectives.

c. Analytical test methods, method detection limits, and practical quantitation limits.

d. Name of analytical laboratory.

e. Laboratory quality control (include laboratory QA/QC procedures in appendices).

f. Sample collection procedures and equipment.

g. Field quality control procedures:

- duplicates (10% of all field samples)
- blanks (field, equipment, etc.)
- equipment calibration and maintenance
- equipment decontamination
- sample containers
- sample preservation
- sample holding times (must be specified)
- sample packaging and shipment
- sample documentation (field notebooks, sample labeling, etc.)
- chain of custody.

h. Criteria for data acceptance and rejection; and

i. Schedule of monitoring frequency.

Respondent shall follow all DTSC and USEPA guidance for sampling and analysis. DTSC may request that the sampling and analysis section be a separate document.

10. Corrective Measure Completion Criteria

Describe the process and criteria (e.g., ground water cleanup goal met at all compliance points for one year) for determining when corrective measures may cease. Also describe the process and criteria for determining when maintenance and monitoring may cease. Criteria for corrective measures such as a landfill cap must be carefully crafted to account for the fact that a landfill cap will never actually "cease" but will need to be maintained and monitored for a long period of time. Satisfaction of the completion criteria will trigger preparation and submittal of the Corrective Measure Completion Report.

11. O&M Contingency Procedures:

a. Procedures to address system breakdowns and operational problems including a list of redundant and emergency back-up equipment and procedures.

b. Should the corrective measure suffer complete failure, specify alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and/or the environment or exceed cleanup standards.

c. The O&M Plan must specify that, in the event of a major breakdown and/or complete failure of the corrective measure (includes emergency situations), Respondent will orally notify DTSC within 24 hours of the event and will notify DTSC in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment; and

d. Procedures to be implemented in the event that the corrective measure is experiencing major operational problems, is not performing to design specifications and/or will not achieve the cleanup goals in the expected timeframe. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure were to fail, then the secondary would be implemented. This section would thus specify that if the primary corrective measure failed, then design plans would be developed for the secondary measure.

12. Data Management and Documentation Requirements

Describe how analytical data and results will be evaluated, documented, and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data.

The O&M Plan shall specify that Respondent collect and maintain the following information:

a. Progress Report Information

- Work Accomplishments (e.g., performance levels achieved, hours of treatment operation, treated and/or excavated volumes, concentration of contaminants in treated and/or excavated volumes, nature and volume of wastes generated, etc.).
- Record of significant activities (e.g., sampling events, inspections, problems encountered, action taken to rectify problems, etc.).

b. Monitoring and laboratory data.

c. Records of operating costs; and

d. Personnel, maintenance, and inspection records.

These data and information should be used to prepare Progress Reports and the Corrective Measure Completion Report.

C. Draft Plans and Specifications

Respondent shall prepare draft Plans and Specifications that are based on the CMI Workplan but include additional design detail. A draft O&M Plan and Construction Workplan shall be submitted to DTSC simultaneously with the draft Plans and Specifications. The draft design package must include drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings
- Electrical Drawings
- Structural Drawings
- Piping and Instrumentation Diagrams
- Excavation and Earthwork Drawings
- Equipment Lists
- Site Preparation and Field Work Standards
- Preliminary Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications to DTSC, Respondent shall:

a. Proofread the specifications for accuracy and consistency with the CMI Workplan; and

b. Coordinate and cross-check the specifications and drawings.

D. Final Plans and Specifications

Respondent shall prepare final Plans and Specifications that are sufficient to be included in a contract document and be advertised for bid. A final O&M Plan and

Construction Workplan shall be submitted to DTSC simultaneously with the final Plans and Specifications. The final design package must consist of the detailed drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings
- Electrical Drawings
- Piping and Instrumentation Diagrams
- Structural Drawings
- Excavation and Earthwork Drawings
- Site Preparation and Field Work Standards
- Construction Drawings
- Installation Drawings
- Equipment Lists
- Detailed Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the final project specifications to DTSC, Respondent shall:

a. Proofread the specifications for accuracy and consistency with the preliminary design; and

b. Coordinate and cross-check the specifications and drawings.

E. Construction Workplan

Respondent shall prepare a Construction Workplan which documents the overall management strategy, construction quality assurance procedures and schedule for constructing the corrective measure. A draft Construction Workplan shall be submitted

to DTSC simultaneously with the draft Plans and Specifications and draft O&M Plan. A final Construction Workplan shall be submitted to DTSC simultaneously with the final Plans and Specifications and final O&M Plan. Upon receipt of written approval from DTSC, Respondent shall commence the construction process and implement the Construction Workplan in accordance with the schedule and provisions contained therein. The Construction Workplan must be approved by DTSC prior to the start of corrective measure construction. The Construction Workplan must, at a minimum, include the following elements:

1. Introduction/Purpose

   Describe the purpose of the document and provide a summary description of the project.

2. Project Management

   Describe the construction management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure construction effort and provide construction quality assurance/quality control (including contractor personnel).

3. Project Schedule

   The project schedule must include timing for key elements of the bidding process, timing for initiation and completion of all major corrective measure construction tasks as specified in the Final Plans and Specifications, and specify when the Construction Completion Report is to be submitted to DTSC.

4. Construction Quality Assurance/Quality Control Program

   The purpose of construction quality assurance is to ensure, with a reasonable degree of certainty, that a completed corrective measure will meet or exceed all design criteria, plans and specifications. The Construction Workplan must include a complete construction quality assurance program to be implemented by Respondent.

5. Waste Management Procedures

   Describe the wastes generated by construction of the corrective measure and how they will be managed.

6. Sampling and Monitoring

   Sampling and monitoring activities may be needed for construction quality assurance/quality control and/or other construction related purposes. If sampling activities are necessary, the Construction Workplan must include a complete sampling and analysis section which specifies at a minimum the following information:

   a. Description and purpose of monitoring tasks.

   b. Data quality objectives.

   c. Analytical test methods, method detection limits and practical quantitation limits.

   d. Name of analytical laboratory.

   e. Laboratory quality control (include laboratory QA/QC procedures in appendices)

   f. Sample collection procedures and equipment.

   g. Field quality control procedures:

      - duplicates (10% of all field samples)
      - blanks (field, equipment, etc.)
      - equipment calibration and maintenance
      - equipment decontamination
      - sample containers
      - sample preservation
      - sample holding times (must be specified)
      - sample packaging and shipment
      - sample documentation (field notebooks, sample labeling, etc.)

- chain of custody.

h. Criteria for data acceptance and rejection; and

i. Schedule of monitoring frequency.

Respondent shall follow all DTSC and USEPA guidance for sampling and analysis. DTSC may request that the sampling and analysis section be a separate document.

7. Construction Contingency Procedures

   a. Changes to the design and/or specifications may be needed during construction to address unforeseen problems encountered in the field. Procedures to address such circumstances, including notification of DTSC, must be included in the Construction Workplan.

   b. The Construction Workplan must specify that, in the event of a construction emergency (e.g., fire, earthwork failure, etc.), Respondent will orally notify DTSC within 24 hours of the event and will notify DTSC in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on public health and/or the environment; and

   c. Procedures to be implemented if unforeseen events prevent corrective measure construction. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure could not be constructed, then the secondary would be implemented. This section would thus specify that if the primary corrective measure could not be constructed, then design plans would be developed for the secondary measure.

8. Construction safety procedures should be specified in a separate Health and Safety Plan.

9. Data Management and Documentation Requirements

Describe how analytical data and results will be evaluated, documented, and managed, including development of an analytical database. State the criteria that will be used by the project team to review and determine the quality of data.

The Construction Workplan shall specify that Respondent collect and maintain the following information:

a. Progress Report Information
    - Work Accomplishments (e.g., hours of operation, excavated volumes, nature, and volume of wastes generated, area of cap completed, length of trench completed, etc.).
    - Record of significant activities (e.g., sampling events, inspections, problems encountered, action taken to rectify problems, etc.).

b. Monitoring and laboratory data.

c. Records of construction costs; and

d. Personnel, maintenance, and inspection records.

This data and information should be used to prepare progress reports and the Construction Completion Report.

10. Cost Estimate/Financial Assurance

If financial assurance for corrective measure construction and operation is required by an enforcement order, facility permit through use of DTSC discretion, the Construction Workplan must include a cost estimate, specify which financial mechanism will be used and when the mechanism will be established. The cost estimate shall include both construction and operation and maintenance costs. An initial cost estimate shall be included in the draft Construction Workplan and a final cost estimate shall be included in the final Construction Workplan. The financial assurance mechanism may include a performance or surety bond, a trust fund, a letter of credit, financial test and corporate guarantee equivalent to that in the California Code of Regulations, Title 22, Section 66264.143, 66265.143 or any other mechanism acceptable to DTSC.

Financial assurance mechanisms are used to assure DTSC that Respondent has adequate financial resources to construct and operate the corrective measure.

F. Construction Completion Report

Respondent shall prepare a Construction Completion Report which documents how the completed project is consistent with the Final Plans and Specifications. A Construction Completion Report shall be submitted to DTSC when the construction and any operational tests have been completed. The Construction Completion Report shall, at a minimum, include the following elements:

1. Purpose.
2. Synopsis of the corrective measure, design criteria, and certification that the corrective measure was constructed in accordance with the Final Plans and Specifications;
3. Explanation and description of any modifications to the Final Plans and Specifications and why these were necessary for the project.
4. Results of any operational testing and/or monitoring, indicating how initial operation of the corrective measure compares to the design criteria.
5. Summary of significant activities that occurred during construction. Include a discussion of problems encountered and how they were addressed.
6. Summary of any inspection findings (include copies of key inspection documents in appendices).
7. As built drawings; and
8. A schedule indicating when any treatment systems will begin full scale operations.

G. Corrective Measure Completion Report

Respondent shall prepare a Corrective Measure Completion Report when Respondent believes that the corrective measure completion criteria have been satisfied. The purpose of the Corrective Measure Completion Report is to fully document how the corrective measure completion criteria have been satisfied and to justify why the corrective measure and/or monitoring may cease. The Corrective Measure Completion Report shall, at a minimum, include the following elements:

1. Purpose.
2. Synopsis of the corrective measure.
3. Corrective Measure Completion Criteria

   Describe the process and criteria for determining when corrective measures, maintenance and monitoring may cease. Corrective measure completion criteria were given in the final Operation and Maintenance (O&M) Plan.
4. Demonstration that the completion criteria have been met. Include results of testing and/or monitoring, indicating how operation of the corrective measure compares to the completion criteria.
5. Summary of work accomplishments (e.g., performance levels achieved, total hours of treatment operation, total treated and/or excavated volumes, nature and volume of wastes generated, etc.).
6. Summary of significant activities that occurred during operations. Include a discussion of problems encountered and how they were addressed.
7. Summary of inspection findings (include copies of key inspection documents in appendices); and
8. Summary of total operation and maintenance costs.

H. Submittal Summary

The following list provides a summary of when and how key documents should be submitted to DTSC. DTSC may adjust this list to meet site-specific circumstances.

1. The submittal schedule for the documents listed below should be included in an enforcement order, permit or otherwise specified by DTSC.
    - CMI Workplan
2. The submittal schedule for the documents listed below must be specified in the CMI Workplan. The groupings reflect which documents should be submitted together.
    - Draft Plans and Specifications
    - Draft Operation and Maintenance Plan
    - Draft Construction Workplan
    - Final Plans and Specifications
    - Final Operation and Maintenance Plan
    - Final Construction Workplan
3. The submittal schedule for the document listed below must be specified in the Final Construction Workplan.
    - Construction Completion Report
4. The submittal schedule for the document listed below is based on when Respondent believes the completion criteria have been satisfied.
    - Corrective Measure Completion Report
5. The submittal schedule for Progress Reports and a Health and Safety Plan shall be specified in the order or permit.

ATTACHMENT 7:
SCOPE OF WORK FOR PROGRESS REPORTS

Progress Reports shall, at a minimum, include the following information:

1. A description of significant activities and work completed during the reporting period.
2. A summary of any findings made during the reporting period.
3. Summaries of all problems or potential problems encountered during the reporting period.
4. Actions taken and/or planned to rectify problems.
5. All projected work for the next reporting period.
6. A discussion of any changes in personnel that occurred during the reporting period.
7. Summaries of all contacts with representatives of the press, local community, or public interest groups during the reporting period.
8. Summary of treatment system effectiveness. Provide a comparison of treatment system operation to predicted performance levels (applicable only if there is an operating treatment system); and
9. If requested by DTSC, the results of any sampling tests and/or other data generated during the reporting period.